

Markbams farewell to

HUSBANDRY:

OR,

THE ENRICHING OF ALL

Sorts of Barren and Sterile Grounds in our
Kingdome, to be as fruitfull in all manner of
Graine, Pulse and Grasse, as the best grounds
whatsoever:

Together with the annoyances, and preservation of
all Graine and Seed, from one yeare to many yeares.

As also, a husbandly computation of Men and Cattels dayly
Labours, their Expences, Charges, and utmost Profits.

Now newly the fourth time, revised, corrected, and amended,
together with many new Additions, and cheape Experiments: :

For the bettering of Arable, Pasture, and Woody Grounds: Of
making good all Grounds againe, spoiled with overflowing of salt
water by Sea-breaches; as also, the enriching of the Hop-
garden, and many other things never published before.



LONDON,

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St. Pauls Church-yard. 1649.



TO THE RIGHT W O R S H I P F U L L

and his most worthy friend

Mr Bonham Norton Esq;

Worthy Sir.



Knowledge which is the divine mother of certaine Goodnesse, never came unwelcome to a knowing Iudgement; no more I hope shall this my labour to your worthy Selfe, since doubtlesse you shall find in it many things New, some things necessary, and nothing which hath not in it some particular touch of profit: It is a worke your former encouragements to my other labours did create in me; and the wants you worthily found, I hope shall bring you supplies both wholesome and becoming. The experience I assure your Goodnesse was the expence of a bitter and tedious Winter, but the con-

tentment (in gaining my wish) made it more pleasant than all the three other Seasons. What ever it be, it comes to you full of love, full of service. And since I know Vertue measureth all things by its own goodnesse; it is enough to me, that I know you are that Vertue. In you is power to judge, in you is Authority to exercise Mercy, let them both flye from your Goodnesse with that mildnesse, that in them my hopes may be crowned, and my selfe rest ever at your service,

CERVASE MARKHAM.

The



The Preface to the Reader.

Shewing the use, profit, and truth of the Worke.

He use and application of this Worke (gentle Reader) is to reduce the hard, Barren and Sterile grounds, such as were never fruitfull, or such as have bene fruitfull and are made barren by ill husbandry, to be generally as fruitfull as any ground whatsoever; from whence shall ensue these generall profits.

First, plenty of Corne and Pulse, because all grounds being made able and apt for tillage, the Kingdome may afford to sowe for one bushell that is now, hereafter five hundred, so mighty great are the unfruitfull wastes of Heathes, Downes, Mores, and such like, which at this day lie unprofitably; & to this abundance of Corne will arise an equall abundance of Grasse and Pasture: for as the best ground of the worst, is to be converted to pasture, and the worst to Tillage, so that worst being tilled and drest, when it hath done bearing of Corne, (which will be in sixe or seven yeares) shall for as many yeares more beare as good pasture either for breeding or feeding as can be required, and then being newly drest againe, shall newly flourish in its first profit.

Secondly,

To the Reader.

Secondly, whereas in fruitfull places the third or fourth part of all arable ground is lost in the fallow or tilth ground, now in these barren grounds you shall keepe no fallow field at all, but all shall bear either Corn or Grasse, that fallow part serving to pay for the charge bestowed on it and the rest.

Lastly, whereas in fertile grounds you cannot have either Wheat, Barley, or Rye, under two, three, foure, five, and sometimes sixe severall plowings, as fallowing in January and February, Stirring in Aprill and May, Foiling in Iuly and August, Winter ridging in October and November, and Sowing with other Ardors; now in these hard grounds restored you shall not plow above twice at the most, to the saving of the Husband-mans pains, his Cattels travell, and a larger limitation of time for other necessary businesses.

For the truth of the Work be that will ride into the barren parts of Devonshire or Cornwall, into the mountainous parts of Wales, into the hard parts of Middlesexe or Darby-shire, or into the cold parts of Northumberland, Cumberland, Westmoreland, Lancashire, or Cheshire, shall finde where industry is used, a full satisfaction for all that is here written. Farewell.

Thine, G. M.



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ADDITION.

*An excellent way to take Moles, and
to preserve good Grounds from
such annoyance.*

PUt Garlike, Onions, or Leekes, into
the mouths of the holes, and they
will come out quickly as amazed.



MARKHAM, HIS Farewell to Husbandry.

CHAP. I.

*The nature of Grounds in generall; But particularly
of the barren and sterre earth.*

COme to the full effect of my purpose without any preambulation, or satisfaction to the curious, for to the honestly vertuous are all mine endeavors directed: you shall understand that it is meet that every Husbandman be skilful in the true knowledge of the natures of grounds; as which is fruitfull, which not: of which, in my first Bookes I have written sufficiently; nor doe I in this booke intend to write any tittle that is in them contained; for I love not *Tautologie*, so I deadly hate to wrong my friend.

Grounds then, as I have formerly written in my first Bookes, being simple or compoundrd; as simple Clays, Sands, or Gravels together, may be all good, and all fit to bring forth increase, or all evill and barren, and unfit for profit: for every Earth, whether it be simple or compounded, whether of it selfe or of double
B mixture,

mixture, doth participate wholly with the Clyme wherein it lieth; and as that is more hot, or more cold, more moyst, or more dry, so is the earth evermore or lesse fruitfull, yet for the better understanding of the plaine Countrey man, you shall know that both the fruitfull & unfruitfull Ground have their severall faces and characters whereby they bee as well knowne as by the clime or situation of the continent; for that ground which though it beare not any extraordinary abundance of grasse, yet will loade it selfe with strong and lusty weedes, as Hemblockes, Dockes, Mallowe., Nettles, Ketlocks, and such like, is undoubtedly a most rich and fruitfull ground for any graine whatsoever. Also, that ground which beareth Reede, Rushes, Clover, Daisie, and such like, is ever fruitfull in grasse and Herbage, so that small cost and lesse labour in such grounds, will ever make good the profit of the Husband man: But with these rich grounds at this time I have nothing to doe.

Knowledge of
barren grounds

To come downe then to the barren and unwholesome Grounds, you shall understand that they are to be knowne three severall wayes; first, by the Clyme and Continent wherein they lye; next, by their constitution and condition; and lastly, by outward faces and Characters. By the Clyme and Continent, as when the ground lyes farre remote from the Sunne, or when it lyes mountainous and high, stony and rocky; or so neere unto the skirts and borders of the Sea, that the continuall Fogges, Stormes, Mysts, and ill Vapours arising from thence, doe poison and starve the earth: all which are most apparent signes of barrenesse. By the Constitution and Condition, as when the ground is either too extreame cold and moyst, or else too violently

violently hot and dry; either of which produceth much hardnesse to bring forth, and sheweth the earth so lying, to be good for little or no profit. By the outward Faces and Characters, as when you see (instead of Grasse, which would be green, flowry, and thick growing) a pale thinne mossie substance cover the earth, as most commonly is upon all high Plaines, Heathes, Downes, and such like: or when you see the ground covered with Heath, Lyng, Broome, Braken, Gorse, or such like, they be most apparent signes of infinite great barrennesse, as may be seene in many Mores, Forrests, and other wild and woody places. And of these unfer- till places, you shall understand that it is the clay ground, which for the most part brings forth the Mosse, the Broome, the Gorse, and such like: the Sand, which brinketh forth Brakes, Lyng, Heath; and the mixt earth, which utters Whinnes, Briars, and a world of such like unnaturall and basterdly Issues.

Thus having a true knowledge of the Nature and Condition of your ground, you shall then proceede to the ordering, earing, and dressing of the same, whereby it may not onely be purged and clenfed from those faults which hindred the increase thereof, but also so much bettered and refined, that the best ground may not boast of more ample increase, nor your more fruit- full placed neighbours exceede you in any thing, more then in a little ease.

CHAP. 2.

Of the Ordering, Tilling, and Dressing of all sorts of plaine barren Clays, whether they be simple or compound.

THOU whom it hath pleased God to place upon a barren & hard soyle, whose bread must evermore be grounded with sweat and labour, that mayest nobly and victoriously boast the conquest of the Earth, having conquered Nature by altering Nature, and yet made Nature better then she was before: thou I say that takest this honest delight in goodnesse, hearken unto these following Precepts.

The first enriching of barren Grounds.

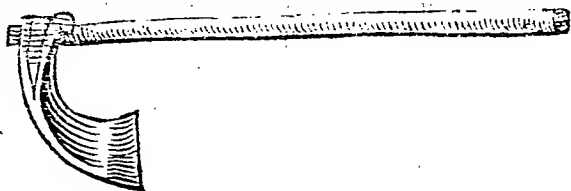
As soone as thou hast well pondered and considered the nature of thy ground, and dost find that it is altogether barren and unfruitfull, the clyme and condition not suffering it to bring forth any thing of worth or profit, and that thou hast well weighed what manner of Earth it is, as that namely it is either a simple Clay, or a Clay so mixt with other earths, that yet notwithstanding the Clay is still most predominant, thou shalt then select or chuse out of this earth so much as to thy selfe shall seeme convenient, it being answerable to the strength of thy Teame, and the ability of thy purse and labour to compasse; and this earth so chosen out, thou shalt about the beginning of *May*, in a faire season, breake up with a strong Plough, such as is generally used in all strong Clay grounds, the Share being rather long then broad, and the Colture rather somewhat bending then streight and even, according as the nature of the ground shall require, which every simple Plough-man will soone finde out in turning up two or three furrowes; for according to the cutting of the
earth

earth so must the Husbandman fashion the temper of his plough.

Now for the manner of plowing this bad and barren The manner of plowing. earth, if the ground lye free from water (which commonly all evill barren earths do) you shall then throw downe your Furrows flat, and betwixt every Furrow you shall leave a baulke of earth halfe as broad as the Furrow, and so go over, and plow your whole earth up, without making any difference or distinction of lands: but if you feare any annoyance of water, then you shall lay your Furrows more high, neere, and close together, dividing the grounds into severall lands, and proportioning every land to lie the highest in the midst, so that the water may have a descent or passage on either side.

Now so soone as you have thus plowed up your land, and turned all the swarth inward unto the earth, Hacking of Ground. you shall then take Hacks of iron, well steeled and reasonable sharp, such a competent number, as or your purse or power can compasse, or the greatnesse of your ground requireth, for you shall understand that one good hacker, being a lusty labourer, will at good ease hack or cut more than halfe an Acre of ground in a day; and with these Hacks you shall hew and cut to peeces, all the earth formerly plowed up, furrow by furrow, and not the furrows only, but also each severall baulke that was left betweene, and any other greene swarth whatsoever the plow had escaped, and it shall be cut into as small peeces as conveniently you can; for thereby is your mould made much more mellow and plentifull, and your Seed at such time as it is to be cast into the earth, a great deale the better and safer covered, and much more sooner made to sprout and bring forth

encrease. Now for the shape and fashion of these Hacks, you shall behold it in this Figure.



Sanding of
ground

When you have thus hacked all your ground, and broke in peeces all hard crusts and roughnesse of the swarth, you shall then immediately, with all the convenient speed you can (because time is very precious in these labours) if you be neere unto any part of the Sea-coast, or to any other creeke or river, where the salt-water hath a continuall recourse, thence fetch (either on horse-back, or in Cart, or other Tumbrill, such as the nature of the Countrey, or your own ease can afford) great store of the salt sand, and with it cover your ground which hath been formerly plowed and hackt, allowing unto every acre of ground, threescore or four-score full bushells of sand, which is a very good and competent proportion; and this sand thus laid, shall be very well spread and mixed among the other hackt and broken earth. And herein it is to be noted, that not any other sand but the salt is good or available for this purpose, because it is the brine and saltnesse of the same which breedeth this fertility and fruitfulness in the earth, choaking the growth of all weeds and bad things, which would sprout from the earth, & giving strength, vigour, and comfort to all kind of grain or pulse, or any fruit of better nature.

When you have thus sanded your earth, you shall then

then if you have any Limestone about your grounds (as ^{Liming of ground.} barren earths are seldome without) or if you have any quarries of stone (which are seldome unaccompanied with Lime-stone) gather such Lime-stone together, and make a kilne in the most convenient place you have, as well for the carriage of the Lime, as for the gathering together of the stone, and having burnt your Lime, the manner whereof is so generally well known through the whole Kingdome, that in this place it needeth little or no repetition, you shall then on every Acre so formerly plowed, hackt, and sanded, bestow at least forty, or else fifty bushels of lime, spreading and mixing it exceeding well with the other sand and earth; and herein is to be noted, that the stronger and sharper the Lime is, the better the earth will be made thereby, and the greater encrease and profit will issue from the same; neither shall you need to respect the colour and complexion of the Lime, as whether it be purely white (as that which is made from Chaulke) or gray (as that which is made from the small Lime-stone) or else blackish brown (as that which is made from the great stone and maine Quarry) since it is the strength and goodnesse of the Lime, not the beauty and colour which brings forth the profits.

Now that this Lime is of excellent use and wonderfull profit, do but behold almost all the Countries of the Kingdome where there is any barrenesse, and you shall find and see how frequently Lime is used, in so much that of mine own knowledge in some Countries where (in times past) there was one Bushell made or used, there is now many loads, and all risen from the profitable experience which men have found in the same.

Manuring of
Ground.

Now, when you have thus limed your ground, you shall then take of the best manure you have, as Oxe, Cow, or Horse-dung; Straw rotted; either by the littering of Beasts, or by casting upon High-waies; the mudd of Lakes, Ponds or Ditches; the soyle of young Cattell made in the Winter time by feeding at stand Heakes, or any such like kind of Ordure; and this manure or compasse, you shalt carry forth either on Horse-back, or in Carts or Tumbrels (according as the Countrey will afford) and you shall lay it and spread it upon your ground so formerly plowed, hakt, sanded, and limed, in very plentifull manner, so farre forth as your provision will extend: for it is to be understood, that barren and hard earths can never be over-laded with good manure or compasse, since it is only the want of warmth and fatnesse, which manure breedeth, and causeth all manner of fruitfulnessse.

Times for all
labours.

After you have thus manured al your ground, it is to be supposed that the season of the yeare will be well shot on, for the labour of sanding will take little lesse than two months, your ground being of any indifferent great quantity, except you have the assistance and help of many of your friends, which is a courtesie that every Husbandman may embrace, but not trust unto; for I would not wish any man that hath not Tenants to command, to presume on other friends, lest they faile him, and so his work lye halfe done, and halfe undone, which is a great Character of negligence and improvidence: but let every one proportion their labours according to their own strengths, and the number of their ordinary families. The liming of your ground will take at least halfe so much time as the sanding;

sanding; and the manuring rather more than lesse than the liming; so that by any reasonable computation of time, beginning to plow your ground at the beginning of *May*, ere it be hackt, sanded, limed, and manured, *Michaelmas* will be come, which is the end of *September*; for I allow the month of *May* to plowing and hacking; *June* and *July* for sanding; *August* for liming; and *September* for manuring. So then to proceed on with our labour, at *Michaelmas*, or from that time to the end of *October*, you shall begin to plow over that ground againe which formerly you had plowed, hackt, sanded, limed and manured; and at this latter plowing, you shall plow the ground somewhat deeper than you did before; and taking a good stich (as they call it in Husbandry) you shall be sure to raise up the quick earth, which had not been stirred up with the plough before, making your furrows greater & deeper than formerly they were, and laying them closer and rounder together than they were before; and in this arder or latter earing, you shall be carefull to plow your ground as cleane as you can, without baulks or other escapes in Husbandry, and as you thus plow your ground, you shall have certaine Hackers, with their Hacks, to follow the Plow, and to cut the earth and furrows into very small peeces, as was formerly shewed in the hacking and cutting of the first arder; then so soon as your ground is thus plowed and hackt, you shall take a paire or two of very strong and good iron Harrowes, and with them you shall go over your ground, tearing that which was formerly plowed and hackt into more small peeces than before, and raising up the mould in much greater abundance than was formerly seene: which work once finished, you shall then

Second plowing.

Second hacking.

First harrowing.

then take your Seed which would be the finest, cleanest, and best Wheat you can provide, and after the manner of good Husbandry, you shall sow it on the ground very plentifully, not starving the ground for want of Seed (which were a tyrannous penury) nor yet choaking it with too much (which is as lavish a foolery) but giving it the full due, leave it to the earth and Gods blessing.

The second
harrowing.

Now so soone as you have thus sowed your Seed, forthwith you shall take all the Harrows again, harrowing the Seed into the earth, and covering it close and well with all care and diligence; and in this latter harrowing, you shall have great respect to breake every clot as much as you can, and so stirre up and make as much mould as you can, and the finer such mould is made, the better it is, so it cover deep and close; for you shall understand, that all these kinds of barren Clays are naturally tough, cold, and binding, whereby they stifle and choake any thing that growes within them; for the naturall toughnesse of the earth will not give any thing leave to sprout, or if it do sprout, the binding nature thereof, so fetters and locks it within the mould, that it cannot issue out, or if it do (with extreme strugling) rise through the pores of the same, yet doth the cold presently starve the root and make the stemme utterly unable to bring forth fruit, or any profit at all, so that if the toughnesse be not converted to a gentle loosenesse and easie dividing of it selfe, the coldnesse unto warmth, and the hard binding unto a soft liberty, there can be small hope of commodity, which this manner of dressing the earth bringeth to passe; for the mixture of the sand takes away the toughnesse, the Lime brings heat, and the manure comfort and liberty: as

Faults in the
earth.

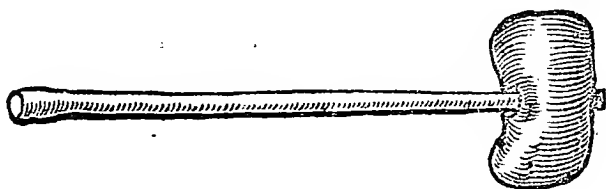
for

for the hacking and cutting the earth, that is to make all the rest symbolize and mixe together: for as if any Dispensatory make a Medicine, and cast his Ingredients confusedly one upon another, without care of mixture, melting or dissolution, shall find but a corrupt, disorderly, and ill compounded receipt; so he that dresseth and manureth his ground, and doth not by hacking, plowing, or some other Husbandly course, mixe the earth and the compasse perfectly well together, shall seldome find profit from his Seed, or find any man of wit desirous to become his imitator. Now I must confesse, that some easie grounds of light and temperate nature, will mixe very well and sufficiently by the help of the Plough only; but this barren hard earth of which I now write, must only be broken by this violent and extreme labour, or else there will neither be mould, earth, nor any other coverture for the Seed, but only foule, great and disorderly clots and lumps, through which the graine can never passe, and that which lyeth uncovered will be made a prey to fowle and other vermine which will hourelly destroy it.

After you have sowed and harrowed the ground, you shall then see if there remaine any clots or hard lumps of earth unbroken, which the Teeth of the Harrows are not able to teare in peeces (as it is very likely you shall perceive many) for these hard barren earths which are plowed up in their greene swarthes, are nothing neere so easily broken and brought to mould, as are the mellow soft earths which have been formerly plowed many times before, because the hard and intricate roots of the Grasse, Mosse, and other quick substances growing upon the same doth bind and hold the mould so close and fast together, besides the natu-
rall

Of clotting
Ground.

all strength and hardnesse of the earth, that without much industry and painful labour, it is possible to bring it to that finenesse of mould which Art and good Husbandry requireth ; therefore as soon as you behold those clots and lumps to lye undissevered and unbroken, you shall forthwith take good strong clotting beetles, or maules made of hard and very sound wood according to the proportion of this Figure.



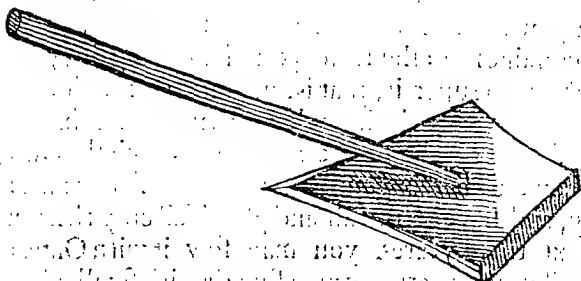
And with these maules or clotting beetles, you shall break all the hard clots and lumps of earth in pieces, even to so small dust as possibly you can ; because you are to presuppose that these clots thus hard, tough, and unwilling to be with any meanes digested into mould, are either not at all, or else very insufficiently mixed with the Sand, Lime, and other manures : and therefore you must rather break them, that thereby they may mix, and give easie passage to the Graine, and not like heavy poyeses and dead lumps lye and presse down the Seed so that it cannot sprout.

Another manner of clotting.

But if it so fall out that partly by the hardnesse of the ill earth, partly through the season and drynesse of the year, that these clots and lumps of earth will either not be broken at all, or at least so insufficiently that the mould will not be any thing neere so fine as you would have it; you shall then having done your best endeavor,

let

let your ground rest till there have fallen a good round shower or two of raine, which may wet the clots through and through; and then the next faire blast, you shall take your clotting beetles, but not those which you tooke before in the dry season, but some much lighter, broader and flatter, being made of thick Ash-boards more then a foot square, and above two inches in thickness, according to this figure.



And with these flat maules and beetles, you shall breake all the unbroken clots and lumps of earth which shall trouble or annoy your ground, making your Lands as plaine and smooth as is possible; so that the graine may have easie passage forth; which labour as soone as you have finished, you shall then referre the increase and prosperity thereof unto the mercies of God, who no doubt will give his blessings according to thy labour and thankfulness.

As touching the trimming and weeding of this Corne, after it is sprung a foot above the earth, or thereabouts, you shall understand, that these hard barren grounds are very seldome troubled with weeds; for weeds, especially great, strong, and offensive weeds are the issues of rich and fertile soyles; yet, if through the

Of weeding.

trimming

trimming and making of this earth (which is not commonly seene) you doe perceiue any store of thyistles, or other grosser weeds to spring up, you shall then in the moneth of *May*, with hookes, nippers, and such like tooles, cut them away or pull them up by the rootes, which indeed is the better manner of weeding.

Seuerall feedes
Seuerall yeares

Now here is to be understood, that your ground being thus dressed and trimmed as is before shewed, you may very well for the two first yeares sowe Wheate or Rye upon it, but Wheate is the greater profit and more certaine seed; the third yeere bestowing but your fold of Sheepe upon it, that is, manuring it with your sheepe, (for it is to be intended, that in these barren earths sheepe are the greatest stocke of which the Husbandman can boast) you may very well sowe it with barely, and have a fruitfull and plentiful crop thereon the next three yeares, you may sow it with Oates; and the seventh yeare you may sowe it with small white Garden Pease or Beanes, according as you shall finde the strength and goodnesse of the ground, (for Beanes desire somewhat a richer soyle then the Pease) then for three or foure yeares following the seven, you may let it lie at rest for grasse, and doubtlesse it will yeeld you either as good pasture, or as good Medow as you can reasonably require. And then after the expence of this time; it shall bee good that you dresse and order your ground againe in such sort as was formerly declared; and thus you may every yeare dresse one or other piece of ground, till you have gone over all your ground, or at least as much as you shall thinke expedient; and without faile, he that is Master of the most fruitfullest and richest soyle, shall not boast of any greater increase then you shall, onely your charge

may

may be a little more, and so shall be also your commodity, which shall make an amends for your charge; as for your toyles, yours shall be much the lesse, by a just computation; for though you have many labours, yet they are but Summer labours, and neither hurt your ownebody, nor your Cattell: whereas the Master of the rich soile is in continuall worke both Winter and Summer, labouring twice so much to confound the superfluous growth of weeds as you doe to beget the increase of Corne; and whereas he must ever keepe a third or fourth part of his Corne-ground without fruit, you shall not keepe any which shall not yeeld you a sufficient commodity.

Now methinkes I heare in this place, to be objected Objection. unto me, that whereas I doe prescribe the sanding of these barren Earths with the salt Sea-sand, and no other (as it is true, for all other fresh sand is unavaileable) what if the ground doe lie so farre within the Land, that there is no salt sand within many score miles of it, how then shall I make good my barren earth; sure to fetch sand so farre, will never equall the cost, or it may be this experience hath no further limits then to such hard and barren earths as lye alongst the Sea-coast onely.

To this I answere, that al-be this salt Sea-sand be of Answer. infinite good and necessarie use, enriching grounds wonderfully much, yet is not this experience of bettering of barren soiles, so strictly bound thereunto, but that without any use of the same, you may make your earth as fruitfull in Corne or Grasse, as hath beene already formerly declared.

Therefore if your ground lye much within the Land, and farre from the Sea, so that this commodity

of

Ordering
Earth where
lands wanteth.

offland is not by any possible meanes to be gotten, then you shall (having first lookt into the nature of your ground, and finding it to be by all characters and faces a cold, barren, stiffe, dry Clay, yeelding nothing but a short mossie grasse, without any other burthen at all as is seen upon most Plaines, and Downes of this Kingdom) first plow it and hacke it as was before shewed in the former part of this Chapter, then in stead of sanding it, you shall lime it as aforesaid, or rather a little more plentifully, then you shall manure it, after (as at seed time) you shall plow it and hack it againe, then harrow it as before said; then to every aker of ground, you shall take two bushels of very dry bay salt, and in such manner as you sowe your Wheate, you shall sowe this salt upon the ground, then immediately after the sowing of the salt, you shall sowe your Wheat, which Wheate would be thus prepared before you sow it; the day before you are to sowe your graine, you shall take Bay salt and water, and mixing them together make a brine so strong that it will beare an egge, then put the Wheate you are to sowe into that brine, and let it steepe therein till the next day, then draine it as clean as may bee from the brine, and so sow it, harrow it, clot it, and weede it, as was before declared, and no doubt but you shall finde a marvailous great increase thereby: for this I can assure you, both from a most certaine knowledge, and a most worthy relation, that a gentleman buying some store of feed-Wheate, and inforst to bring it home by Sea, by some casuall meanes some of the sacks at the unlading, fell into the Sea, and were much drencht in the salt-water, wherent the Gentleman being grieved (as doubting some hurt to come to the seed) yet inforst of necessity

Sowing of
Salt.

The excellen-
cy of Salt.

to make use thereof, caused all the Wheat which was so wet to be sown by it selfe in a particular place, and upon the worst ground which he had, (as much despairing in the increase thereof) and it is most infallibly true, that of that wet Seed, he received at least five-fold more profit than of any other, and from thence it came, that this experiment of Brine and the sowing of salt hath taken place; from which the painfull husbandman hath found such infinite increase to arise, that the use thereof will never be layed down in this Kingdome. Neither is the thing it selfe without good and strong probability of much increase and strength for the bettering of all manner of arable grounds; for there is nothing which killeth weeds, quicks, and other offences of the ground so much as saltnesse: for what makes your Pigeons dung and your Pullens dung to be better for arable grounds than any other dung or manure whatsoever, but by reason of the saltnesse thereof? by which saltnesse also, you may judge the strength and heat thereof, insomuch that the proper taste of fire, or any hot thing is ever salt; also we say in Philosophy, that bloud which carrieth the vitall heat and warmth of the body is in taste salt, and so a nourisher, maintainer, and increaser of all the strength and vigour of the inward faculties; whereas Flegme, Choler, and Melancholly, which are the hurts and confounders of the vitall spirits, the first is in taste sweet, the second bitter, and the last of an earthy and dry taste, full of much loathsomenesse.

Now againe you shall understand, that as you thus wet or steepe your Wheat seed, so you may also steepe any other Seed, as Barley, Oates, Beanes, Pease, Lupins,
Of steeping
Seed in brine.

Fetches, and such like; of which your Beanes, Pease and Lupins, you may steep more than any of the rest, and your Oates the least.

As touching Rye, it shall be good not to steep it all, for it is a great enemy to all manner of wet and moisture, inasmuch, that the curious Husbandman will forbear to sow it in any great shower of raine, bearing in his mind this ancient addage or saying, that *Rye will drown in the Hopper*; as on the contrary part, *Wheat would be sown so moist, that it might stick to the Hopper*: yet notwithstanding, when you do sow Rye in any of these In-land and cold barren Countries, where sand is not to be gotten, you shall not by any means omit the sowing of your salt before, for it is nothing needre so moist as it is warm and comfortable.

CHAP. 3.

Of the ordering, Tyling, and Dressing of all rough Barren Clayes, whether simple or compound, being laden and over-run with Gorse, Broome, and such like.

NExt unto these plaine barren earths, which by reason of their heights, are subject in the Winter time to all manner of cold, frosts, stormes, tempests, blasts, and winds, which are the perfect hinderers of all encrease and growth; and in the Summer time to all hot scorchings, scaldings, and fiery reflections of the Sun, which on the contrary part, burneth and withereth away, that little seeming encrease which appeareth above the earth; I will place that barren clay, whether it be mixt or unmixt, which lying not so high, and being subject unto those hurts and offences, seemeth to be

be a little more fruitfull, yet either by the extreme cold moysture thereof, or the stony hardnesse, and other malignant qualities, is no lesse barren than that of which I have formerly written, which indeed is that barren and vild soyle, which will neither beare come nor grasse, but is only over-run and quite covered over with great, thick, and tall bushes of Gorse or Furs, which is a most sharpe, woody, and grosse weed, so full of pricks, that neither Horse, Beast, Sheepe, nor Goates, dare thrust their noses to the ground to gather up that little poore grasse which groweth thereon: And albeit these Gorse or Furs, are one way a little commodity to the needfull Husbandman, in being a reasonable good fuell, either for baking, brewing, or divers other sudden and necessary uses; yet, in as much as the profit being compared with the great quantity of earth which they cover and destroy, and which with good Husbandry might be brought to great fruitfulness, is indeed no profit at all; it shall not be amisse for every good Husbandman that is pesterd and over-laden with such ground, to seek by way of good Husbandry how to reduce and bring it to that perfection and excellency which may be best for his own particular commodity, and the generall good of the Kingdome wherein he liveth.

Then is there another kind of soyle which is nothing at all differing from this, but is every way as barren and sterile, which is that ground which is over-run with broome (which is as noysome a weed as the former) and though it have not such sharp prickles as the other, whereby to hinder the grazing of Cattell, yet doth it grow so close and thick together, and is naturally so poysonous and offensive to grasse, that you shall sel-

dome see any grow where this Broome prospereth; besides the bitterneſſe thereof is ſo-unpleaſant and diſtaſtfull to all kind of cattell, that not any will ever crop or bite upon the ſame, only it is of ſome neceſſary uſe for the poore husbandman, in reſpect that it ſerveth him both for fuell, for thatching and the covering of his houſes, (being for that purpoſe, of all, the longeſt laſting) and alſo for the making of Beesomes for clenſing of the houſe and barnes, or elſe for ſale and commodity in the market; all which profits (as before I ſaid) being compared with the loſſe of the ground, and the goodneſſe that might be reaped from the ſame, are indeed truly no profits but hinderances.

Therefore I would wiſh every man that is Maſter of ſuch grounds, whether they be overrun with Gorſe, Furs, Broome, or any ſuch kind of groſſe, woody, or ſubſtantiall weed, firſt, to cut up the weed (of what ſort ſoever it be, whether Gorſe, Furs, or Broome) as cloſe and neere unto the ground as you can poſſibly, and then making them up into ſheafes or bigge faggots, carry them home and ſtack them up very dry, ſo as no raine may enter or pierce into them, for the ſmaleſt wet will rot and conſume them to dirt and filthineſſe; which done, you ſhall make Labourers with hacks, picks, and ſuch like tooles, to ſtub up all the roots which you left in the ground, even to the very bottome of the ſame; and theſe roots you ſhall be very carefull to have ſtubbed up exceeding cleane, by no meanes leaving (ſo neere as you can) any part or parcell of the roots behind you; then thoſe roots thus ſtubbed up, you ſhall diligently gather together into little heapes as bigge as Moule-hills,

Destroying
of weeds.

hills, and place them upon the ground a pretty distance one from another, and so let them lye till the Sunne and winde have dryed them: for it is to bee intended, that this labour must begin about the latter end of *Aprill*, and beginning of *May*.

Then so soone as you find these rootes are thorowly dried, you shall pile them handsomely together, laying them a little hollow one from another, and then with a hacke cut up some of the same earth, and therewithall cover all the rootes quite over, onely leaving a vent hole at the top, and on one side, and so let the hills rest two or three dayes, till the earth bee a little partcht and dried, then take fire and some other light dry fuell which is aptest to blaze, and with the same kindle every hill, not leaving them till you see them perfectly on fire: which done, let them burne both day and night, till the substance being wholly consumed, the fire go out of it owne selfe, and this in some Countries is called the *Burning of Baite*. Burning of baite.

Now as soone as the fire hath beene extinguished for two or three dayes, you shall then come, and with shovels (and beetles to breake the hard burnt earth in peeces) you shall spread all the ashes cleane over the ground; which done, you shall with a very long plow teare up the earth into great and deep furrowes, and divide it into Lands, as you shall thinke meete and convenient, laying them higher, or flatter, as you shall have occasion; and as the ground lyeth more or lesse within the daunger of water, whether it bee the over-flowing of some neere neighbouring Brookes or Rivers, or else other standing Water occasioned by Raine and extraordinary Showers, which must be carefully lookt unto, because all over-flows and inundati- Breaking of the burnt earth

Causes of unfruitfulness.

Causes of un-
fruitfulne. se.

on of water, is a mighty destroyer and consumer of graine: but these barren grounds of which I now write are very seldome oppressed with water; for most commonly they lie so high, that the continuall drynesse thereof, is a strong occasion of the much unfruitfulnesse. After you have thus burnt your baite, and plowed up your ground, you shall then with your hackes hacken into small pieces, in such manner as was declared in the former Chapter; then you shall (if the Sea be any thing neere you) sand it with salt sand (as before said) then lime it, and after, manure it either with Oxe dung, Horse dung, rotten Straw, mudde of Pond and Ditches, the spiteling of House-floores, or sweepings of Channels and Streets, or such like, or for want of all these in case you dwell neere unto the Sea-coast (where manure for the most part is in greatest scarcity, and the hardest to become by) you shall gather from the bottome of the rockes (where the seyde of the Sea continually beateth) a certaine blacke weede, which they call Hempe-weede, having great broad leaves, and growing in great abundance, in thick tufts, and hanging together like Pease-straw; and with these weedes, you shall cover your lands all over of a pretty good thicknesse, and then forthwith you shall plow it againe somewhat deeper, and with somewhat greater furrowes then before, raising up the new quicke earth to intermingle and mixe with those manures and helps which you had formerly prepared and laid upon the ground; then shall you againe hacke it and harrow it; then shall you take Pigeons dung, or Pullens dung (that is, any kind of land fowle whatsoever, but by no meanes any water-fowle) or Pigeons dung and Pullens dung mixt together, and allowing

An excellent
manure.

Of Plowing.

Of divers
manures.

lowing to every aker two or three bushels thereof, which is the true quantity of seed proportioned for the same, and this dung being broken and masht into small pieces, you shall put into your Sydlop or Hopper, and in the same manner as you sow your corne, you shall sowe this dung upon the ground, and then immediately after it you shall sowe your Wheat, either steeped in brine, or else salt Sea-water, or unsteeped, as you shall think good, but in case you can neither get salt sand nor Sea-Rocke-weedes, then you shall by no meanes omit the steeping of your Seede; neither shall you faile before you sowe your Seede, to mixe with your Pigeons and Pullens dung, a full equall part of Bay-salt well dried and broke, and so sowed with the dung upon the land, and then the seede after it; which done, you shall harrow it againe, clot it, sleight it, and smooth it, in such sort as was formerly declared in the former Chapter, for these labours have no alterations, but must in all points bee done as was before set downe.

Mixture of
manures.

Now touching the weeding of this earth, after the Corne beginneth to grow above the ground, there is no feare to be had either of Thistles, Tares, Cockles, Darnell, Docks, and such like strong weeds, which indeed are the issues of good grounds ill ordered and handled: but the weeds which you shall most feare in this place, is young Gorse, or Furs, or els young Broome, which are very apt to grow from the least part or parcell of roots that shall be left behind; nay the very nature of those barren earths is such, that of its owne accord it will bring forth those weedes, the cold sharpenesse of the ayre mixing with the sterility & roughnesse of the earth, being the cause that it will give

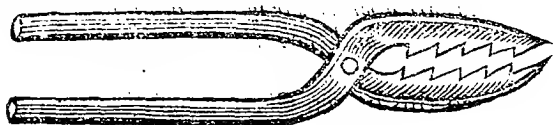
Of weeding.

life to no other better plants; therefore so soone as you shall behold any of them to appeare above the earth, though they be not halfe a finger high, you shall presently with all diligence, pull them up by the roots and cast them away; or lay them in heapes that they may be afterwards burnt, and the ashes sprinkled upon the ground: and herein is to be observed, that the younger and the sooner that you do pull up these weedes, the better it is, and the easilier they will come from the earth, and the sooner be destroyed: for all those mixtures wherewith already you have beene taught to mixe your earth, are in themselves such naturall enemies to all these kind of barren weeds, that should you omit the manuell labour of destroying them (which no good husband willingly will do) yet in time the earth of it selfe; and the often plowing of the same would leaveno such offence of weeds or other growths which might hinder the Corne.

Time for
weeding.

Now touching the best time when to pull away these weeds, though generally it must bee done as soone as they doe appeare above the ground; yet it shall not bee amisse for you to deferre the worke till after a shower of raine, and then immediately after the ground is wet (and so by that meanes more apt and willing to open and forsake the roots fastned within it) you shall with all diligence pull them out of the ground, and destroy them: neither shall you pull them out of the ground with you hands onely; for the Gorse have exceeding sharpe prickes, so that with your naked hands you are not able to touch them, and to arme your hands, against them, with strong thicke gloves, would be to boistrous and combersome, so that sometimes you might either misse the weedes, and pull up the
Corne;

Corne: or else pull up the Corne and weeds both together; therefore to prevent all these casualties or hindrances, you shall take a paire of long small wooden Nippers, made after the forme of this figure.



And with these you shall pull the weeds out of the ground, and cast them into the furtowes by the sides of the Lands, till your dayes worke be finished, and then with a rake you shall rake them together, and so lay them in heapes, to dry and whither, in more convenient places, that when time shall serve, you may burne them, and use them, as was before declared.

Lastly you shall have great respect, that if this ground be very much troubled with loose stones, as flint, pibble, and such like, that then you very carefully get them gathered from the ground, both before and after you have plowed it, and to lay them on heapes in other vacant places, where they may serve for pavings, and such like purposes when time requireth: but if the ground be over-run with great or else small lime-stones, as for the most part these barren grounds are; then shall you with all care gather them up, and lay them in great heaps in some corner of your field where you may make a convenient lime-kilne, and so there burne these stones thus gathered, which will be both an infinit profit, and an infinit ease to the rest of your labours.

Gathering of
stones.

CHAP. 4.

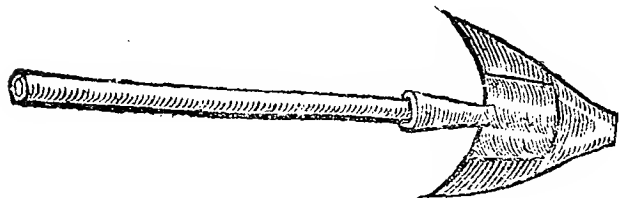
Of the ordering, Tilling, and dressing of all rough barren Clayes, whether simple or compound, that are over-runne with Whinnes, and such like.

NExt unto this barren Claye which is over-runne with Furres, Broome, and such like, I will place that barren and unfertile earth, being also a Claye, whether simple or compound, which is over-runne onely with Whinnes, and indeede bearing little or no other burthen, or if it doe beare any other burthen, as some little short mossie grasse, yet is that grasse so covered over with these sharpe Whinnes, that not any beast dare put his nose to the ground, or bite upon the same; and indeed, this kinde of earth is not any whit at all lesse barren then those of which I have already written, but rather more, in that the malignant qualities thereof are not so soone corrected, nor yet the vertues so soone restored.

What whinnes
are.

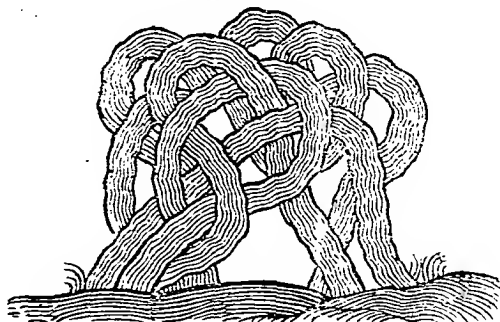
Whinnes are a certaine kinde of rough dry weedes, which growe bushie and thicke together, very short and close unto the ground, being of a darke browne colour, and of crooked growth, thicke and confused, and full of knots, and those knots armed with hard, long, sharpe prickles, like thornes or bryars, they have little browne leaves which shaddow the prickles, and doe winde their branches so one into another, that they can hardly be separated, yet is their growth at any time little more then a handfull above the earth, onely they spread exceedingly, and will runne and cover over a whole field, choaking up all sorts of good plants whatsoever,

soever, and turning the best grasse that is to mosse, and filthinesse, wherefore if at any time you be Master of any such naughty and barren ground, and would have it reduced unto goodnesse and fertility, you shall first take a fine thinne paring-shovell made of the best yron, and well steeled and hardened round about the edges, according to the forme of this figure following.



And with this paring-shovell, you shall first pare up all the upper swarth of the ground, about two inches, or an inch and a halfe thicke at the least, and every paring would be some three foote in length at the least, and so broad as the shovell will conveniently give it leave, and this swarth thus pared up, you shall first turne the Whinny or grasse side downeward, and the earth side upward, and so let it lye two or three dayes in the Sunne to dry (for this worke is intended to beginne in the moneth of May) and when that side is well dried, you shall turne the other side, and dry it also, then when all the swarth is dried, you shall gather sixe or seven peeces together, and turning the Whinny or grasse side inward, and the earth side outward, you shall make round hollow little hills thereof, much what according to the fashion of this figure following.

And



And the inward hollownesse like unto the hollownesse of an Oven, but much lesse in compasse, which done, you shall fill the hollownesse with dry chips, or small stickes, or Furres and Straw mixed together, which you shall put in at the vent-hole which shall be left on one side of the hill, and kindling it with fire, you shall burne all that swarth in such sort as you burnt the rootes of your Furres and Broome before; for this is also called a burning of Baite, as well as the former; for it is a most principall nourisher of the earth, and a very sudden destroyer of all malignant weedes whatsoever.

Breaking of
Baite.

After the burning of your hills, as soone as the fire is utterly quenched and gone out, and no heate at all left in the hills; you shall then with clotting beetles beate them all downe to dust; and then with shovels you shall spread the ashes quite over all the ground, as was before declared in the former Chapter: and herein is to be noted, that you must place these hills as thick and close together as by any meanes possibly you can, making your hills so much the lesse and lower, that

that they may stand thicker and neerer together, and so cover more ground, and thereby the heat and strength of the fire to disperse it self over all that piece of ground; for the fire burning upon the earth, doth as much good for the enriching of the earth, and destroying of the weeds, as the ashes doth which are spread upon the same.

Now after your baite is in this manner burned and ^{plowing.} spread, you shall then (as was before shewed) plow up your ground in good large furrows, then hack it very small, Sand it, Lime it, and manure it; and of all manures, there is not any better for this ground than Oxe-dung and ashes well mixt together; of which ashes, those of Beane straw, Pease-straw, or any other straw are best; and those of Wood or Fernenext, those of Charcoale next, and those of Sea-coale or Pit-coale are the worst of all: Swines dung is not much amisse for this ground; for though it be a great breeder of weeds and thistles in good and fertile grounds, yet in this cold hard and barren earth it worketh no such effect, but is a great comforter, and warme moystner of the same.

After you have thus made your ground; as soone as Wheat seed-time commeth, which is the latter end of *September*, and beginning of *October*, you shall then with great care plow over your ground againe, and take great respect that you turne up your furrows much deeper than before, and that for two especiall causes; the first, that the new earth may the better mixe with the old earth, and those helps that are added thereunto; and secondly, that you may be surer to teare up the roots of all the Whins from the very bottome of the earth, not suffering any part of them to remaine behind,

behind: and for this purpose it shall not be amisse to have an idle Boy or two to follow your Plow, and to gather away all the roots that shall be torne up, or any way else left bare above ground, which roots shall be laid on heaps in convenient places, and then after burnt, and the ashes thereof spread upon the ground, which will be a very great comfort unto the seed, being a speedy help unto the sprouting thereof, and a very warme comforter of the root after the stemme is spindled above ground, for in these cold barren earths, nothing doth so much spoyle and slay Corne, as the dead coldnesse which lyeth at the root thereof; for in many of these unfertill places, you shall see Corne at the first sowing (whilest there is a little strength in the ground) sprout in great abundance, promising much hope of the profit; but when it should spindle and come to much better perfection, that poore strength being spent and consumed, and the cold and drynesse of the soyle, having as it were overcome all matter of comfort, then presently you shall see the blade of the Corne turne yellow, the stem or stalke to wither, and either put forth no eare at all, or else a very poore little empty one, being laden with nothing but a most dry chaffie huske without substance. But to come againe to our purpose, after you have thus plowed up your ground the second time, you shall then hack it againe, and harrow it, as was declared in the other former Chapters; then you shall take your seed-wheat which hath been steept either in brine or Sea water, and to every bushell of that Seed you shall adde a bushell of Bay salt, and mixethem very well together in your Hopper or Sydlop, and so sow them together upon the ground, ob-
serving

serving to double your casts to oft, that you may not faile to cast that true quantity of seed into the earth which otherwise you would have done if so be there had been no mixture at all, for to do otherwise were to deceive the ground, and a handfull of seed so saved would be the losse of a peck in the time of Harvest; therefore have great respect that your ground have his due, for it is no more cost though it be a little labour.

When your seed is sown, you shall harrow it againe *Harrowing.* the second time, clot it, smooth it and sleight it, as was before declared in the former Chapters.

As touching the weeding of this ground, it is the least labour of all other, for the earth being so corrected as is *Weeding.* before shewd, it will naturally of it selfe put forth no weeds, especially if you remember to plow it deep, and be sure to teare up and gather away all the quick roots, otherwise if that labour be any thing neglected, then will it put forth both Whins, and great store of other rough weeds, which as soone as you shall perceive to appeare, you shall presently with your wooden Nippers pull them up by the roots, as was at large declared in the foregoing Chapter.

Now for the generall profit of this ground thus made *Profit.* and prepared, it is the same that the two former are, that is to say, it will beare you good and sufficient Wheat, in plentiful abundance for the space of two or three years, then Barley a yeare after; then Oates three yeares together after the Barley; and Pease or Beanes a yeare after the Oates; then lastly very good Meadow or Pasture, for the space of three or foure yeares after, and then you shall begin and dresse it againe, as was formerly declared.

CHAP. 5.

Of the ordering, Tilling, and Dressing of all barren Cluies, whether simple or else compound, which are over-run with Ling, or Heath.

THere followeth now successively, another sort of barren earth, which indeed is much more sterile and barren than any of the other formerly written upon: because they, out of their own natures, do beare a certaine kind of grasse or food which will relieve ordinary hard store-cattell, whether it be Sheepe, Goates, or young Beasts; But this earth of which I am now to entreate beareth no grasse at all, but only a vild filthy black brown weed, which we call Ling or Heath, the tender tops whereof Cattell and wild Deere will sometimes crop, yet it is to them but little reliefe, and only maintaineth life and no more. Now albeit some may object unto me, that this kind of soyle is ever a sandy soyle and no clay, as may be seen in most Chases, Forrests, and Downes: yet I answer, that albe it hold so in generall; yet there are divers clayes, especially in mountainous Countries, that are pestered with these kind of weeds, as may be seen in the North and North-west parts of *Devonshire*, in some parts of *Cornewall*, and in many parts both of North and South *Wales*; and these clay grounds which are thus offended with these weeds of Ling or Heath, are much more barren and unfruitfull than the sands, because of their much more coldnesse; yet those clayes which are mixed with either black Sand, dun Sand, or yellow Sand, and over-run thus with Heath or Ling, are the most barren of all: to make any further description of this

Heath

Heath or Lyng, being a thing so notoriously knowne o-
ver all this Kingdome, I hold it meereley needlesse, one-
ly to say it is a rough brown weede, shooting out abun-
dance of stalkes from one root, with little darke leaves,
and flowers on the toppe, of a pale reddish colour, much
inclining unto Peach colour at the first, but being full
blowne, they are then a little more whitish.

You therefore that have any such ground, and de-
sire to bring it to fruitfulnessse, and the bearing of good Destroying
of heath. corne and grasse in a reasonable abundance, you shall
first with sythes or sharpe hookes (but old sythes are
the better) cut downe all the Heath, or Lyng, which
groweth upon the earth you intend to convert to good-
nes, so neere the ground as possibly you can; then when
it is cut downe (which would ever be at the begining
of the Moneth of *May*) you shall let it lye upon the
ground, daily tossing and turning it till it become very
dry, then spreading it all over the ground, and mixing
or covering it with dry straw of any kinde whatsoever,
you shall presently set it on fire in so many severall cor-
ners of the field, that all the severall fires in the end
may meete in one point, and not leave any part of the
mowen Heath or Lyng unburnt, or any part of the
ground unscorched; after this is done, and the ground
cooled, you shall with your flat clotting beetles beate
the ashes hard into the ground, then you shall take a
strong plow, with a broad winged share, and an even
colture, and you shall plow up all this ground thus
burnt, in very large and deepe furrowes, by no meanes
picking out any of the quicke roots which shal remaine
in the furrowes so turned up, but letting them rest
in the earth still, then with your hacks, and the helpe
of your yron paring shovell, you shall cut up the fur-
rowes,

Another
burning of
baite.

rowes, formerly turnd up, into short pieces of three foot, or three foot and a halfe long, and some lesse, as occasion shall serve; then with these pieces, you shall build little hollow hills, such as in the former Chapter you made of the upper swarth of the ground onely; and then filling the hollownesse with dry heath, and dry straw mixt together, you shall set every hill on fire, and so burne the very substance of the earth into ashes, which will soone be done by reason of the infinit number of roots and small strings which lye mixt in the earth, and the drynesse thereof occasioned by the former burning: And this is another kind of burning of baite much differing from all the former, and yet to as great end and profit as any whatsoever; and these hills must as the former, bee placed one as neere another as is possible, so as they may spread and cover over the greatest part of the ground, and leaving no more then a good reasonable path to passe betweene hill and hill.

Now as soone as you have thus burned all your Baite, and that your hills are cold, you shall then as was before shewed in the former Chapters, with beetles and shovels breake downe the hills, and spread the earth and ashes over all the ground; which done, you shall sand it (if the situation of the ground bee answerable thereunto) and lime it in such sort as was shewed in the second Chapter; then when it is limed, and the lime equally spread, not more in one place then in another, you shall then manure it with the best manure you can provide, of which there is none better or more proper for this ground then mans ordure, and the rubbish, sweepings, parings and spitlings of houses mixt together, or for want of this (because it may not bee in

so great plenty as other manures) you may take either old Oxe dung, or Horse dung, or for want of them, the old rotten and mouldy staddles or bottomes of Come-stacks, or reeds, especially Pease-stacks, or Beane-stacks, provided that it bee thorowly rotten, for the lesse rotten it is, the worse it is: Also the scowrings of common Sewers, and especially those through which much of mans urine doth passe, is a most wonderfull and beneficiall manure for these grounds, so are also the scowrings of sinkes and channells which come from Kitchens and wash-houses, where great store of Brine and salt broth is shed, and other greasie, fat and putrified substances, as also abundance of sope suddes, and buck-ashes, and other sope and lee washings, then which there is no better manure that can be used for these kind of grounds.

After your ground is thus perfectly made and manured, and that Wheat seede time doth draw on, which (as before was shewed) is ever at the latter end of *September*, you shall then plow up your ground againe in that manner as was shewed for the former earths, to wit, much deeper then before: for you are to understand, that this ground being drest as is before declared, there will remaine nothing of the furrowes which were first plowed up but the ashes, which being covered with sand, lime, and manure, the earth will lie plaine and leuell, so that of necessity you must raise up new furrowes of new earth, which being done, you shall then with your hacks, cut all the new earth into very small pieces, mixing them well with the other mould made of sand, lime, manure and ashes; then as was before said, you shall harrow it to make the mixture so much the better, and the mould so much

the finer; and then if it have beene sanded, you may sowe your Seede-wheate simply of it selfe, without any doubt of the plentifull increase thereof; but if it have not been sanded, then as in the forgoing Chapter, you shall not onely steepe your Seede in brine (as before shewed) but also you shall mixe your Seed with Bay salt, and so sow it into the ground; or if at the time of sowing (after it is plowed, hackt, and harrowed) you bestow either Pigeons dung, or Pullens dung, or Sheepes dung upon the land, it will be much better, and the Corne will give a much greater increase. Now as soone as your land is sowne, you shall then forthwith harrow it againe and cover the seede very close, then you shall clot it, smooth it, and sleight it (as was before shewed.)

Of Weeding.

As touching the weeding and clenfing of this earth after the Corne is sprung up, you shall understand that there is great care to bee had thereunto, for this ground is much subject unto weedes and those of the worst kind: for although for the most part it will bee free from all manner of soft and tender weedes, as thistles, cockle, darnell, ketlockes, dockes, rape, and such like herball stufte; yet is it much subject to twitch bryars, which grow at both ends, lyng, Wild time, and such like, any of which as soone as you shall see appeare or peepe above the earth, you shall presently with your Nippers pull them up by the rootes, and not suffer them in any wise to looke a handfull above the ground, for if you doe, their hardnesse is so great, and their rootes so large and fast fixt in the mould, that you can by no meanes pull them away without great losse and hurt to the graine, pulling up with them all such roots of Corne, as shall bee fixed neere about them: for
any

any other weak and superfluous things which shal grow from the Land, you may with ordinary weeding-hookes cut them away; as for long grasse, whether it be soft or sedge, or any other such like stuffe, you shall not stirre it but let it grow; for it keepeth warme the rootes of your Coine, and giveth nourishment and increase thereunto: Now for the profit of this soyle thus ordered and husbanded, it is equall with any of the former, and will beare Wheate very plentifully for the space of the three first yeares; good Barley the fourth yeare, with the helpe of the sheepe-fold (as was before said) and good Oates the fifth, sixth and seventh yeares; and very good small Pease the eighth yeare (for Beanes this soyle will very hardly beare at all) and the ninth, tenth and eleventh yeare it will beare very good meadow (though not altogether very fine pure grasse, yet very good feeding and wholesome grasse) or so good pasture as a man can reasonably require for any holding Cattell whatsoever; nay, it will also indifferently well feed, and fat Cattell, though peradventure it requireth a little longer time than other finer grounds will.

CHAP. 6.

Of the ordering, Tylling and Dressing of all plaine, simple barren Sands, bearing nothing but a short mossie grasse.

HAVING thus (in as large manner as I hope shall bee needfull for any judicall or indifferent Reader) written of the Natures, Orderings, Plowings and Dressings of all manner of barren and unfruitfull Clayes, whether they be simple of themselves, or else com-

pounded with other earths, as sands, chaulkes, gravels, and such like ; shewing by those naturall burthens which continually of their own accords they produce (which indeed is the easiest and safest way of knowledge) how to amend and better them, and bring them to that perfection of fruitfulnessse, that the best earth shall but in a very small degree exceed them , nay, hardly anything at all, except in the saving of a little charge and some labour, without which nothing is to be obtained by the Husbandman ; neither is this charge or labour thus bestowed on these barren grounds to be grutcht at by any honest mind ; since the worst crop of ten or eleven, will make good his charge and toyle with a reasonable interest ; so that I make account, nine or ten yeares profits come into his Barnes without purchase, for it is to be intended that all these earths formerly spoken of, are not to be drest, or to put the Husbandman to any charge more than the first yeare of ten or eleven, for the second yeare he shall as soone as he hath gathered his Wheat off, which will be in *August*, and finisht other parts of his Harvest, presently put his Plow into the same Wheate-ground againe and plow it up, hack it, hatrow it, sow it, harrow it againe, clot it, and weed it, as in the former yeare, and so consequently of all the rest of the yeares following, whereby you perceive that all labours and charges are saved more than once plowing and sowing.

This then considered, it necessarily now followeth that I speak of the bettering and bringing into perfection of all manner of baren Sand-grounds, being simple of themselves, without any mixture of other Earths, except one and the same kind, as Sand
with

with sand, though peradventure the colours of the sands may alter; as red with white, yellow with blacke, &c. which in as much as the whole substance is sand without any contrary mixture, therefore it may well be called simple and not compound: and of these sands, I purpose to intreate, as formerly I did of the Clayes; that is to say, by their outward faces and Characters, which are those burthens and increases which of their owne proper natures, without any helpe or compulsion of any others, they produce and bring forth into the world.

And first of that naughty cold and barren sand, which lying upon high, stony, and mountainous Rocky places, or else upon lower cold bleake Plaines, subject to the North and North-east winds and tempests, or bordering upon the Seas, doth not bring forth any thing but a short mossie grasse which the Sun maketh bitter, & the cold dewes fulsome and unsavory in taste. If any man then be master of such unprofitable & unfraitfull earth, and desire to have it brought to goodnesse & perfection, you shall, first, at the beginning of the Spring, as about midde *Aprill* or earlier, with a strong Plow answerable to the soyle, yet somewhat lesse both in timbers and irons than that wherewith you plow your Claye grounds, plow so much of that earth up as you may conveniently compasse to sow and dresse exactly and perfectly; for to undertake more, were to make ill unprofitable, and to cast away much labour and charge without any profit; this ground you shall plow of an indifferent depth, though not so deepe as the Clayes, and you shall lay the furrowes though flat, yet close one to another, without leaving any balke betweene, but plowing all very cleane; yet not so

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very cleane and close together, that you may lay the greene swarth to the new plowed or quicke earth; but rather turne one swarth against another, so as the furrowes may lye, and no more but touch the edges one of another: This when you have done, you shall then with your hacks cut and break all the earth so turned up into very small pieces, and not onely the earth so turned up, but also all other greene swarth which was left unplowed; provided, that before this labour of hacking, you let the ground lie certaine dayes in the furrowes, that one swarth heating and scalding the other, they may both equally rot and grow mellow together, which once perceived by the blacknesse thereof, you may then at your pleasure hacke it and cut it as is before declared.

Objection.

Now some may in this place object unto me, that this labour of hacking should be needlesse, in as much as all sand grounds whatsoever are out of their own natures so light, loose, and willing to dislever, that this toyle might very well and to good purpose be saved.

Answer.

To this I answer, that true it is, most sands in their owne natures are loose, and light, and willing to dislever into fine mold without any extremity, especially rich and fruitfull sands, whose predominant quality of warmth giveth nourishment and increase; but these barren and cold sands, in which is a certaine flegmatique toughnesse and most unwholesome driness, are of a cleane contrary nature, and through the stony hardnesse thereof, they are as unapt to breake and dislever as any Clay whatsoever: besides, the swarth being of a tough mossie substance (which ever carrieth a hard strong roote answerable with the cold in which

it is ingendred) doth so constantly binde, tetter, and hold the mould to gather, that it is impossible for any harrow to breake it in pieces, or together from it so much mould as may serue to cover the Corne and give it roote when it is sowne into the same; and therefore this work of hacking is necessary.

When therefore you have thus hackt your Land and distributed the mould into many small pieces, you shall then with all expedition marle it; which forasmuch as it is no generall or common practice in every part of this Kingdome, I will first tell you what marle is, and then how to find it, digge it, and use it for your best behoofe. Of Marling.

Marle, you shall then understand is (according to the definition of Master *Bernard Pallissy*) a naturall and yet an excellent soyle, being an enemy to all weedes that spring up of themselves, and giving a generative vertue to al seeds that are sowne upon the ground, or (for the plaine husbandmans understanding) it is a certaine rich, stiffe and tough Clay, of a glewie substance and not fat or Oylie as some suppose. This Marle is in quality cold and dry and not hot (as some would have it) and it was earth before it came to bee Marle, and being made Marle yet it is but a Clay ground; all Chalke whatsoever was Marle before it was Chalke, and all manner of Stones which are subject unto Calcynation or burning, as Lime-stone, Flint, or the like, were first Marle before they were stones, and onely hardned by accident and so not possible to be dissolved but by fire: as for Marle it selfe when it is a little hardned it is onely dissolved by frosts and nothing else, and thence is the cause that Marle ever worketh better effect the second yeare than the first; Additions
This

This Marle hath beene made so precious by some writers that it hath beene accounted a fift element, but of this curiosity I will not now dispute.

Touching the complections of colours of Marle, there is some difference, for though all conclude there are foure severall colours in Marle, yet one saith, there is a white, a Gray or Russet, a Blacke and Yellow; another saith, there is a Gray, a Blew, a Yellow and a Red; and a third saith, there is a Red and white mixt like unto porphery, and all these may well be reconciled, and the colours may alter according to the Climat and strength of the Sunne: So that by these Characters, the colour, the toughnesse, and the loosenesse when it is dried, any man of judgement may easily know Marle from any other earth whatsoever. This Marle is so rich in it selfe, and so excellent for continuance, that it will maintaine and enrich barren grounds, the worst for ten yeares, some for a dozen, and some for thirty yeares; yet there is a great respect to bee had in laying of this Marle upon the ground, that is to say, that you lay it neither too thicke nor too thinne, that you give it neither too much, nor too little, for any of these extremities are hurtfull; and therefore hold a meane, and see there be an indifferent mixture between the Marle and the earth, on which it is laid.

For the generall finding out of this Marle, there is no better way for readinesse and the saving of charges, than by a great Augure or wimble of Iron made to receive many bits one longer than another, and so wrestling one after another into the ground to draw out the earth till you finde you are come to the Marle, which perceived and an assay taken, you may then digge at your pleasure.

Now

Now for the places most likely where to find this Marle, it is commonly found in the lowest parts of high Countries, neere Lakes and small Brookes, and in the high parts of low Countries, upon the knolls of small hills, or within the Cliffs of high Mountainous bankes, which bound greater Rivers in : to conclude, you shall seldome find any of these barren sands but they are either verdedged about with marle grounds, or if you will bestow the labour to digge below the sand, you shall not faile to find either marle, or some quarry of stone, or both; for in some places marle lieth very deep, in other some places within a spades graft of the upper swarth of the earth : therefore it shall be good for you to make prooffe of all the most likely parts of your ground to find out this marle; and as soone as you have found it out, you shall with mattocks and spades digge it up and carrie it to your land, there laying it in bigge round heapes, and setting them within a yard or two one of another; thus when you have filled over all your ground (which would be done with as great speed as might be, for the ancient custome of this Kingdome was, when any man went about to marle his ground, all his Tenants, Neighbours and Friends would come and help him to hasten on the worke) you shall then spread all those heapes, and mixing the Clay well with the Sand, you shall lay all smooth and leuell together; and herein is to be observed, that if the land you thus marle shall lye against the side of any great Hill or Mountaine, whereby there will be much descent in the ground, then you shall (by all means) lay double as much Marle, Sand, or other compasse on the top of the hill as on the bottome, because
the

the raine and showers which shall fall will ever wash the fatneſſe of the earth downe to the loweſt parts thereof.

Now in the laying of your marle, you are to hold this obſervation, that if you laye it on hard and binding grounds, then you are to lay it in the beginning of Winter, but if on grounds of contrary nature, then it muſt be laid in the ſpring or Summer. Againe, you ſhall obſerve, that if you cannot get any perfect and rich marle, if then you can get of that earth which is called Fullers earth, and where the one is not, commonly ever the other is, then may you uſe it in the ſame manner as you ſhould marle, and it is found to be very neere as profitable.


Additions
Obſervations.

Of Chalke, and
the uſe.

When your ground is thus marled (if you beneere to the ſea ſide) you ſhall then alſo ſand it with ſalt ſea ſand, in ſuch ſort as was formerly declared, onely you may forbear to lay altogether ſo much upon this ſand ground as you did on the Clay ground, becauſe an halfe part is fully ſufficient. If you cannot come by this ſalt ſand, then in ſtead thereof, you ſhall take chalke, if any be to be had neere you, and that you may lay in more plentifull manner than the ſand; and al-be it is ſayd, that chalk is a wearer out of the ground, and maketh a rich father, yet a poore ſonne, in this ſoyl it doth not ſo hold, for as it fretteth and waſteth away the goodneſſe that is in Clay groundes, ſo it comforteth and much ſtrengtheneth theſe ſand earthes: and this chalke you ſhall laye in the ſame manner as you did your marle, and in the ſame manner ſpread it and leuell it, which done, you ſhall then Lime it, as was before ſhewed in the Claye groundes, yet not ſo abundantly, becauſe alſo a halfe part will bee ſufficient; after your Liming, you ſhall then manure it with the beſt manure that you have, whether it bee dung

dung of Cattell, Horſe, Sheepe, Goats, Straw, or other rubbiſh; and that being done, and ſeede-time drawing on, you ſhall then plow up your ground againe, mixing the new quicke earth and the former ſoyles ſo well together, that there may be little diſtinguiſhment betweene them; then you ſhall hacke it againe, then harrow it, and laſtly, ſow it with good, ſound, and perfect ſeed, and of ſeedes though Wheate will very well grow upon this earth, yet Rye is the more naturall and certaine in the increaſe: yet according to the ſtrength of the ground, you may uſe your diſcretion, obſerving that if you ſowe wheate, then to ſteepe it before in brine or ſalt ſea-water, as was before deſcribed; but if you ſowe Rye, then you ſhall ſow it ſimply without any helpe, except it be Pigeons dung, or Bay-ſalt ſimple of it ſelfe, in ſuch manner as hath beene before declared; either ſowing the ſalt with the Corne, or before the Corne, as ſhall ſeeme beſt in your owne diſcretion.

After your ſeede is ſowne, you ſhall then harrow it againe, clot it, ſmooth it, and ſleight it, as before is ſhewed in the ſecond Chapter, which done (after the Corne is ſhot above the earth) you ſhall then looke to the weeding of it, being ſomewhat a little too much ſubject to certaine particular weedes, as are Hare-bottles, wild Cheſſe-bolles, Gypſy-flowers, and ſuch like, any of which, when you ſee them ſpring up, you ſhall immediately cut them away cloſe by the rootes, as for tearing their rootes out of the ground with your Nippers, it is not much materiall, for the cutting of them is ſufficient, and they will hardly ever againe grow or do you any hinderance; many other weedes there may grow amongſt theſe which are alſo to be cut away, but theſe

these are the principall, and of most note, wherefore as soone as you have clenſed your lands of these and the rest, you shall then referre the further increase of your profit unto Gods providence.

The Profits.

Lastly, you shall understand that this ground being thus plowed, dressed, and ordered, will without any more dressing, but once plowing and sowing, every yeare beare you good Wheate or good Rye three yeares together; then good Barley the fourth yeare; good oates the fifth, sixth and seventh yeares; excellent good Lupins the eight yeare, and very good Meadow or Pasture three or foure yeares after, and then it shall be necessary to dresse it againe in such manner as was before described.

CHAP. 7.

Of the Plowing, Tilling, Ordering and Inriching of all Barren Sands which are laden and over-runne with Braken, Ferne, or Heath.

NExt unto this plaine, cold, barren Sand, which beareth no other burthen but a short mossie grasse, I wil place that Sand which is laden and over-runne with Braken, Ferne, or Heath, as being by many degrees more barren then the former, both in respect that it is more loose, and lesse substantiall, as also in that it is more dry and harsh, and altogether without nutriment, more then an extreme sterile coldnesse, as appeareth by the burthen it bringeth forth, which is Braken or Ferne, a hard, rough, tough weede, good for nothing but to burne, or else to litter store beasts with, for the breeding of manure; or if you strow it in the high-ways where many travellers passe, it will also there turne

to good reasonable compasse.

Of this kind of ground if you be master, and would reduce it unto fertility and goodnesse, you shall first, whether the Braken bee tall and high (as I have seene some as high as a man on Horse-backe) or short and low (as indeede most commonly these barren earths are, for tall Ferne or Braken shewes some strength in the ground) you shall with sythes first mowe it downe in the moneth of *May*, then whither it and dry it upon the ground, and after spread it as thinne as you can over all the earth you intend to plow; which done, you shall bring your plow and begin to plow the ground after this order: first, you shall turne up your furrow, and lay it flat to the ground, greene-swarth against greene-swarth, then looke how broad your furrow is so turned up, or the ground so covered, and just so much ground you shall leave unplowed betweene furrow and furrow, so that your land may lye a furrowe and a greene balke, a furrowe and a greene balke, till you have gone over all the ground, then shall you take a paring-shovell of yron, and pare up the greene swarth of all the balkes betweene the furrowes, at least two inches thicke, and into peeces of two or three foote long, and with these peeces of earth, and the dry Ferne which is pared up with them, you shall make little round hollow Baite hills, as in the third and fourth Chapters; and these hills shall be set thicke and close over all the ground, and so set on fire and burnt; then when the fire is extinct, and the hilles cold, you shall first with your hacks cut in peeces all the furrowes that were formerly turned up, and then breake downe the burnt hils, and mixe the ashes and earth with the other mould very well together; which done, you shall
then

Of destroying
Braken.

Of Marle.

then with all speede marle this earth as sufficiently as possibly may be, not scanting it of marle, but bestowing it very plentifully upon the same; which done, you shall then plow it over againe, & plowing it exceedingly well, not leaving any ground whatsoever untorne up with the plow; for you shall understand that the reason of leaving the former balkes was, that at this second plowing after the marle was spread upon the ground, the new, quicke, and unstirred fresh earth might as well be stirred up to mixe with the marle, as the other dead earth and ashes formerly received, whereby a fresh comfort should be brought to the ground, and an equall mixture without too much drynesse, and this second Ardor or plowing would begin about the latter end of *June*.

Sanding and liming.

After your ground hath beene thus marled, and the second time plowed, you shall then sand it with salt Sea-sand, lime it, and manure it, as was declared in the fore-going Chapter: and of all manures for this soyle, there is not any so exceeding good as sheepes manure, which although of the Husbandman it bee esteemed a manure but of one yeare, yet by experience in this ground it hapneth otherwise, and is as durable, and as long lasting a compasse as any that can be used, and besides it is a great destroyer of thistles, to which this ground is very much subject, because upon the alteration of the ground the Ferne is also naturally apt to alter unto thistle as we daily see.

Plowing and sowing.

When your ground is thus drest and well ordered, and the Seede-time commeth on, you shall then plow it againe, in such manner as you did the second time, that is to say, very deepe, cleane, and after the manner of good Husbandry, without any rest balkes or other disorders:

disorders : then shall you hack it very well, then harrow it, and then sow it; but by mine advice, in any case, I would not have you to bestow any Wheat upon this soyle (except it be two or three bushels on the best part thereof for experience sake, or provision for your household) for it is a great enemy unto Wheat, and more than the marle hath no nourishment in it for the same, because all that commeth from the salt sand, lime, and manure, is little enough to take away the naturall sterility of the earth it selfe, and give it strength to beare Rye, which it will do very plentifully; and therefore I would wish you for the first three yeares only to sow the best Rye you can get into this ground; the fourth yeare to sow Barley; the fift, sixt, and seventh, Oates; and of Oates, the bigge black Oate is the best for this ground, maketh the best and kindest Oat-meale, and feedeth Horse or Cattell the soundest; as also it is of the hardest constitution, and endureth either cold or drynesse much better than either the white Oate, the cut Oate, or any Oate whatsoever; the eighth yeare, you shall only sow Lupins or Fethches; and three yeares after, you shall let it lye for grasse, and then dresse it againe as before said; for it is to be understood, that in all the following yeares (after the first yeare) you shall bestow no labour upon this ground more than plowing, sowing, hacking, and harrowing, at Seed time only.

But to proceed to the orderly labour of this ground, after you have sown your Rye, you shall then harrow it againe, clot it, smooth it, and sleight it, as was before shewed in the second Chapter of this Book. And although a man would imagine that the sandy loosenesse of this soyle would not need much

Labours after
sowing.

E

clotting

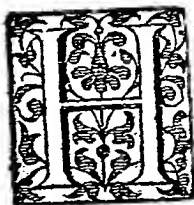
clotting or sleighting of the Earth, yet by reason of the mixture thereof with the Marle and manure, it will so hold and cleave together, that it will aske good strong labour to loosen it and lay it so hollow and smooth as in right it should be.

Weeding.

Touching the weeds which are most subject to this soyle, they are Thistles, and young Brakes or Fernes which will grow up within the Corne, which before they rise so high as the Corne, and even as it were at the first appearing, you must with your wooden Nyppers pull up by the roots, and after take up and lay in some convenient place where they may wither and rot, and so turne to good manure.

CHAP. 8.

Of the Plowing, Tilling, Ordering, and Enriching of all barren Sands, which are laden and over-run with Twitch, or wild Bryar.



Having written sufficiently of this hard and barren, wast, wild, sandy ground, which is over-run with Braken, Fern, Heath, and such like: I will now proceed, and unto it joyne another sand which is much more barren, and that is the sand that bringeth forth nothing but wild Twitch, Bryars, Thorn-bush, and such like undergrowth of yong misliking wood, which never would rise or come to profit the bitter cold drines of the earth wherein it groweth, and the sharpe stormes to which the clime is continually subject both day and night, blasting it in such manner that nothing appeareth but starved, withered, and utterly unprofitable burthens,
god

good for nothing but the fire, and that in a very simple sort. Such ground if you be Master of, and would reduce it to profit and fruitfulness, you shall first with hooks or axes cut up the upper growth thereof, that is, the bushes, young trees, and such like, then you shall also stub up the roots, not leaving any part of them behind in the earth, carrying away both home to your house to be employed either for fuel, or the mending of the hedges, or such like, as you shall have occasion; this done you shall take a paire of strong iron harrowes, and with them you shall harrow over all the earth, tearing up all the Twitch, Bryars, and rough grasse so by the roots, that not any part but the bare earth may be seen, and when your harrows are cloyed, you shall unlade them in severall places of the ground, laying all such rubbish of weedes and other stuffe which the harrows shall gather up in a little round hill, close up together that they may sweat, wither and dry, then spreading them abroad and mixing them well with dry straw, burne them all over the ground, leaving no part of the weeds or grasse unconsumed, then without beating in of the ashes, you shall presently plow the ground all over very cleane as may be, laying the furrows as close as you can one to another, and leaving no earth untoucht or untorne up with the plow, which done, you shall immediately hack it into small peeces, and as you hack it, you shall have idle Boyes to go by the Hackers, to gather away all the roots which they shall loosen or break from the mold, and laying them on heaps in the worst part of the ground, they shall there burne them, and spread the ashes thereon, after your ground is thus harrowed, plowed, and hackt, you shall then muck it, as was formerly shewed in the

Destroying of
Twitch and
Bryars

sixt Chapter, then shall you sand it, lime it, and manure it as before said.

Manures.

Now of manures, which are most proper for this soyle, you shall understand that either Oxe, or Horse manure, rotten straw, or the scowring of Yards is very good, provided that with any of these manures, or all these manures, you mixe the broad-leaved weeds, and other greene weeds, which grow in Ditches, Brookes, Ponds or Lakes, under Willow trees, which with an Iron Rake, Drag, or such like instrument, you may easily draw upon the banke, and so carry it to your land, and there mingle it with the other manure, and so let it rot in the ground, this manure thus mixed is of all other most excellent for this soyle, both by the experience of the Ancients who have left it unto memory, as also by daily practice now used in sundry parts of this Kingdome, as well because of the temperate coolenesse thereof, which in a kindly manner asswageth the lime and sand, as also through the moisture which distilling through those warme Soyles doth quicken the cold starved earth, and giveth a wonderful encrease to the Seed that shall be thrown into the same.

Harrowing
and other labours.

After your ground is thus sufficiently drest with these soyles and manures, you shall then plow it againe the second time; which would be after *Michaelmas*, after the plowing you shall then hack it againe, and be sure to mixe the earth and the manures very well together, then you shall break it in gentle manner with your Harrows, and then sow it; which done, you shall harrow it againe, but then you shall harrow it much more painfully, and not leave any clots or hard earth unbroken that the Harrow can pull in peeces: as touching

touching the Seed which is fittest for this earth, it is the same that is spoken of in the next foregoing Chapter: as namely, the best Rye, or the best Maslin, which is Rie and Wheat equally mixt together, or if there be two parts Rye, and but one Wheat, the Seed will be so much the more certaine and sure holding, and this Seed you may sow on this ground three yeeres together, then Barley, then Oates, and so forth, as is formerly writ of the grounds foregoing. After your ground is sowne and harrowed, you shall then clot it, sleight it, and smooth it as you did the other grounds before, and then lastly with your back Harrows, that is, with a paire of harrowes, the teeth turned upward from the ground, and the back of the harrow next unto the ground, you shall run over all the ground and gather from the same all the loose Grasse, Twitch, or other weeds that shall any waies be raised up, and the same so gathered, you shall lay at the lands end in heaps, either to rot for manure, or else at the time of the yeare to be burnt for ashes, and sprinkled on the earth the next seed time.

Lastly, touching the weeding of this soyle, you shall understand the weeds which are most incident thereunto, are all the same you first went about to destroy: as namely, Twitch, rough wild Grasse, and yong woody undergrowth, besides Thistles, Hare-bottles, and Gypsie-flowers; therefore you shall have a great care at the first appearance of the Corne, to see what weeds arise with it, (for these weeds are ever fully as hasty as the Corne) and as soone as you see them appeare, both your selfe and your people with your hands shall pull them up by the roots, and so weed your land as you would weed a garden, or Woad-ground.

Weeding.

ground. Now at if this first weeding (which will be at the latter Spring commonly called *Michaelmas*, or the Winter Spring) you happen to omit and let some weeds passe your hands unpulled up (which very well may chance in so great a work) you shall then the Summer Spring next following (seeing them as high, or peradventure higher than the Corne) with your wodden nippers pull them up by the roots from the ground, and so cast them away: As touching the cutting them up close by the ground with ordinary weed hooks, I do in no sort allow it, for these kind of weeds are so apt to grow, and also so swift in growth, that if you cut them never so close in the Spring, yet they will againe overmount the Corne before harvest, and by reason of their greatnesse, roughnesse, and much hardnesse, choake and slay much Corne that shall grow about them, and therefore by all meanes you shall pull these weeds up by the roots whilst they are tender (if possibly you can) or otherwise in their strongest growth, sith their sufferance breedeth great losse and destruction.

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CHAP. 9.

Of the Plowing, Tilling, Ordering and Enriching of all barren Sands which are over-run with Mores or morish stinking long Grasse.

UNto these foregoing barren Sands, of which I have already written, I will lastly joyne this last barren Sand, being of all earths, whether Clay or Sand the most barrenest, and that is that filthy black morish Sand which beareth nothing but stinking, putrified

ed Grasse or Mofse, or Mofse and Grasse mixed together, to which not any Beast or Cattell, how corse or hardly bred soever, will at any time lay their mouths: and this kind of ground also is very much subject to marshes and quagmires, of which that which is covered with Mofse, or Grasse, is the worst, and that which is tufted above with rushes, the best and soonest reduced unto goodnesse; in briefe, all these kinds of grounds generally are extremely moist and cold, the superabundance whereof is the occasion of the infinite sterility and barrenesse of the same.

And therefore he that is master of such unprofitable Earth, and would have it brought to some profit or goodness, shall first consider the situation of the ground, as whether it lye high or low, for some of these marsh grounds lye low in the Valleyes, some on the sides of Hills, and some on the tops of Mountaines; then whether the much moystnesse thereof be fed by River, Lake, or Spring, whose veines not having currant passage through or upon the earth, spreads lookingly over all the face thereof, and so rotting the mould with too much wet, makes it not onely unpassable, but also utterly unprofitable for any good burthen.

Now if you find that this marsh Earth lye in the bottome of low valleyes, as it were garded about with hills or higher grounds, so that besides the feeding of certaine Springs, Lakes, or Rivers, every shoure of raine or falling of water from higher grounds bringeth to these an extraordinary moisture to maintain the rottenesse, in this case this ground is past cure for grasse or Corne, and would only be converted and made into a fish-pond for the breeding and feeding of Fish, being a

Ground for
Fish ponds.

thing no lesse profitable to the Husbandman for keeping his house, and furnishing the market than the best Corne-land he hath; and therefore when he maketh any such pond, he shall first raise up the head thereof in the narrowest part of the ground, and this head by driving in of stakes and piles of tough and hard wood, as Elme, Oake, and such like, and by ramming in of the earth hard between them, and sodding the same so fast that the mould can by no meanes be worne downe or undermined with the water, he shall bring it to as firme earth as is possible, and in the midst of this head he shall place a sluice or floud-gate made of sound and cleane Oake timber and plancks, through which at any time to draine the Pond when occasion shall serve, and this done, you shall digge the pond of such depth as the earth conveniently will beare, and casting the earth upon either side, you shall make the banks as large and strong as the ground requireth; then if any spring which did before feed the earth be left out of the compasse of the pond (because it lyeth too high to be brought in) then shall you by drawing gutters or drains from the spring down to the pond, bring all the water of the springs into the pond, and so continually feed it with fresh and sweet water. Then storing it with Fish of best esteeme, as *Carpe*, *Tench*, *Bream*, *Pearch*, and such like, and keeping it from weeds, filth and vermine, there is no doubt of the dayly profit.

But if this marsh and low ground, though it lye low and have many springs falling upon it, yet it lyeth not so extreme low but that there is some River or dry ditches bordering upon it, which lie in a little lower dissent, so that except in case of inundation the river and ditches are free from the moysture of this ground, but
where

where there is any over-flowing of waters, there this marsh ground must needs be drowned, in this case this ground can hardly be made for Corne, because every over-flow putteth the Graine in danger, yet may it be wel converted to excellent pasture or meadow, by finding out the heads of the Springs, and by opening and cleansing them, and then drawing from those cleansed heads, narrow draines or furrows, through which the waters may passe to the neighbour ditches, and so be conveyed down to the lower Rivers; leaving all the rest of the ground dry, and suffering no moistures to passe, but what goeth through these small deepe channels, then as soone as summer commeth, and the ground begins to harden, if you see any of the water stand in any part of the ground, you shall forthwith mend the Draine, and help the water to passe away, which done (as the ground hardneth) you shall with hacks and spades lay the swarth smooth and plaine, and as early in the yeare as you can conveniently, you shall sow upon the ground good store of hay-seeds, and if also you do manure it with the rotten staddles or bottomes of hay-stacks, it will be much the better, and this staddle you shall not spread very thick, but rather of a reasonable thinnesse, that it may the sooner rot and consume upon the same.

But if this marsh and filthy ground do not lye so low as these low vaileys, but rather against the tops of hills, you shall then first open the heads of all the springs you can find, and by severall draines or sluces, draw all the water into one draine, and so carry it away into some neighbouring ditch and valley; and these draines you shall make of a good deapth, as at least two foot, or two foot and a halfe, or more, if need require,

*Draining of
wet ground.*

require, and then crosse-wise, every way overthwart the ground, you shall draw more shallow furrows, all which shall fall into the former deep draines, and so make the ground as constant and firme as may be: then having an intent to imploy it for corne, you shall bring your plow into the ground, being a very strong one, and not much differing in Timber-work or Irons from that which turneth up the clay-grounds, and laying before the plow long waddes or roudes of the straw of Lupines, Pease, or else Fetches, (but Lupines is the best) you shall turne the furrows of earth with the plow upon the waddes, and so cover or bury them in the mould, and thus do unto every furrow, or at least unto most of the furrows you turne up, and so let it lye a little time to rot, as by the space of a fortnight or three weekes, in which space, if the ground receive not raine and moysture enough to rot the straw thus formerly buried, you shall then by stopping the draines, and making the Springs over-flow, gently wash the ground all over and no more, and then presently draine it againe; which done, as soone as the earth is dry, you shall hack it and breake it into small peeces, and then you shall also Sand it, Lime it, and manure it.

And lastly you shall marle it; but if no salt sand be to be had, then in stead of it you shall chalke it, yet of all the rest you shall take the least part of chalke.

This done, about the latter end of *July* you shall plow up the ground againe with somewhat a better and deeper stich than you did before, that if any of the straw be unrotted or unconsumed, it may againe be raised up with the new moyst earth, and so made to waste more speedily, and if at this second carrying you
do

do see any great hard clots to rise, then with your hacks you shall break those hard clots in peeces, laying the Land cleane without clots, weeds, or any other annoyance, and so let it rest till *October*, at which time you shall plow it over againe, hack it, harrow it, and then sow it with the best Seed-Wheat; for this soyle thus drest and manured, albeit it be of all other the most barren, yet by reason of this moysture, which at pleasure may be put to it, or taken from it, and by the mixture of these comfortable soyles and compasses, it is made as good and fruitfull as any earth whatsoever, and will beare Wheate abundantly for the space of three yeares together; then good Barley the fourth yeare, with a little help of a Sheep-fold, or Sheepes manure; then Rye the fifth yeare; Oates the sixth, the seventh and eighth yeares; small Pease the ninth yeare; good medow or pasture three yeares following, and then to be new drest againe, as before said.

Now as soone as your Seed-wheat is sown, you shall then harrow the ground again, and be sure to cover the wheat both deep and close; as for the clots which shall arise from this soyle, it shall not matter whether you break them or no, for by reason of their moisture, they will be pliant and easie for the Wheat to passe through, so that you shall not care how rough your land lye, so it lie cleane, and the corne well covered, but for all other seeds, you shall breake the clots to dust, and lay the land as smooth as may be. Harrowing.

Now for the weeding of this soyle, you will not be much troubled therewith, because this ground naturally of it own accord, putteth forth no weeds, more than those which are ingendred by the new made fruitfulnessse. Weeding.

fulnesse thereof, and those weeds for the most part are a kind of small sedge, or hollow reed; any of which if you see appear, or with them any other kind of weed, you shall at the first appearance, either pull them up by the roots with your wodden nippers, or else cut them close by the ground with your weed-hooks.

CHAP. IO.

A generall way for the enriching of any poore arable ground, either Clay or Sand, with lesse charge then formerly.



DF the former demonstrations and instructions which I have shewed thee, appeare neither too difficult, or too costly (for now I speak to the plaine, simple, poore Husband-man) and yet thou art master of none but barren earth, than thou shalt by thine own industry, or the industry of thy Children, Servants, and such like, or by contracting with Taylors, Botchers, or any poore people that will deserve a penny, gather up, get or buy all the rags, shreds; and base peeces of woollen cloth whatsoever, which are only cast out, and fit for nothing but the dung-hill, and of these if thou canst compass but a sack-full, or a sack-full and a halfe, it is sufficient for the dressing of an acre of arable ground. These shreds and raggs (torne small) or hackt and hewd into small peeces or bits, thou shalt thinly spread over the land before fallowing time, then comming to fallow, plow them all into the ground, and be sure to cover them, then give your land the rest of it ardors, as stirring, soyling, ridging, &c. in their due seasons, and
after

Ragges of
woollen cloth.

after an Husbandly manner: then when you come to sow it, you shall take the slimie thick water which commeth from dung-hills, or for want thereof, water in which Cow-dung hath been steeped, and therein you shall steepe your seed-corne, that is to say, if it be Barley, you shall steepe it for the space of thirty sixe houres, or thereabouts; if it be Wheat, but eighteen houres; and if it be Pease, but twelve houres; for Rye, or Oates, not at all: and the seed thus steeped, you shall sow it according to good Husbandry, and there is no doubt of wonderfull encrease.

Steeping of
seed-corne.

Or any pulse.

There be others which take the seed-corn, and steeping it in good store of Cow-dung and water; stirre all together for an houre in the morning, and an houre at night, and then being setled, draine the water from the seed and the dung, and the next morning sow the corne and the dung both together on the land, being sure not to scant the Land of Seed, and no doubt the encrease will be wonderfull.

Now if this cannot be conveniently done, or that you want dung, if then you take ordinary water, and therein steep your seed, it is good also, and especially for Barley, as is approved by dayly experience.

But now me thinks I heare the poore man say, that here is but one acre drest, and that is a small proportion: to this I answer, if thou beest able but to dresse one acre with these woollen ragges, thou shalt then search amongst the Horners, Tanners, Lanthorne-makers, and such like, and get all the waste shaving of horne which thou canst possibly compasse, and as before of the rags, so of these a sacke and a halfe, or two sacks will dresse an acre: these shavings (which are indeed good for no other use) you shall scatter upon the land as you did the rags,

Shavings of
horne.

Hoofes of cat-
rell.

rags, then plow them in after the same manner, so order the ground, so sow, and in the same manner steep the seed, and questionlesse the encrease will be wonderfull great: these manures will last five yeares without any renewing. Now if of these you cannot get sufficient to trim all your ground, you shall then deale with Butchers, Sowse women, Slaughter-men, Scullions, and the like; and from these you shall get all the hoofes you can, either of Oxe, Cow, Bull, Calfe, Sheepe, Lambes, Deere, Goates, or any thing that cheweth the cud, and which indeed, if not for this use, are otherwise utterly cast away to the dung hill, and despised; and these hoofes you shall cut and hew into small peeces, and scatter thicke upon your land at fallowing time, then plow them in as aforesaid, and do in all points as with the other manures already recited, and so steepe your seed, and there cannot be a greater enricher of a rable ground whatsoever.

Of Woad.

Now if all these will not yet compasse your land, you shall then see what sope ashes you can get or buy, for of all manures there is none more excellent, for besides it giveth an exceeding strength and fatnesse to the land, it also killeth all manner of weeds, great and small, as Broome, Gorse, Whynnes, and the like, and it killeth all manner of Wormes, and venemous creeping things, it is excellent for Woad, and the ground renewed yearly therewith, may be sowne continually: these soape-ashes must be laid on the Land after the fallowing, and then stirred in, two load thereof will serve to dresse an Acre: when it is fit for seed, the seed must be steeped as aforesaid, and then sown, and the encrease will quit the charge manifold. These sope-ashes are also excellent good
for

for Hempe and Flax, being thinly sowne upon the land, after is plowed, and immediately before the Seed be sowne: But if you have more land to dresse, then you must make use of your own ordinary manure, as is The enriching of ordinary manure. Oxe-dung, Horse-dung, and the like, which that you may make richer and stronger then otherwise of its own nature it would be, you shall cause continually to be thrown upon it all your powdred beefe broth, and all other salt broths or brines which shall grow or breed in your house, also all manner of soape-suddes, or other suddes, and washings which shall proceed from the Launderie, and this will so strengthen and enrich your manure that every load shall be worth five of that which wanteth this help. There be diverse other manures which do wonderfully enrich and fatten all manner of barren grounds, as namely the haire of beasts hides, The haire of beasts hides. (which for the most part Tanners and Glovers do cast away) this thinly spread on the Land, and plowed in, brings every yeare a fruitfull crop. Againe, if Braken or Ferne be layed Of Braken. a foot thick upon the Earth, and then a layer of earth upon it, then another layer of Braken, and another layer of earth, and so layer upon layer till the heape be as big as you intend it, and so left to rot all the Winter following, there cannot be a better manure for any arable ground; for you shall understand that the earth will so rot the Braken, and the Braken so soake into the earth, that they will become both one rich substance. And herein you shall note, that whensoever you would have any substance (of what condition soever) quickly to rot and turne to manure, that the only way is to mixe it with earth, and that will in short space bring it to rotnesse. Now this Braken
and

To rot dung quickly.

and earth thus rotted, you shall lay upon your land as you do your ordinary dung of cattell, and then sow your seed being steeped, as aforelaid.

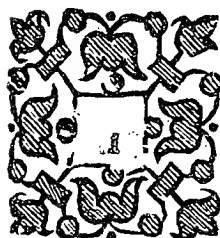
Of Malt-dust. Next your Malt-dust which is the sprout, come, smytham, and other excrements of the malt, is an excellent manure for arable land, allowing three quarters thereof for an acre, and throwing it upon the land after it is plowed and ready to be sown.

Of rotten Pilchers and garbage. There is another manure, which albeit it is not plentiful every where, yet in some places it is, and not inferior to any manure before spoken of, and that is your rotten Pilchards after the oyle is taken from them, and the carcasses cast to the dung-hill, this laid on the land, and plowed in, bringeth corne in great abundance, and no lesse doth the carcasses and garbage of all kind of fish whatsoever, especially of sea-fish.

Of blood offa's. Lastly, the blood, entrails and offall of any beasts is an excellent manure for any kind of graine, plant, or tree, but especially for the Vine, for to it there is no nourishment of greater force or efficacie: also, if this blood be tempered with Lime it is exceeding comfortable for graine, and destroyeth wormes, and other creeping things which hurt Corne, only it must not be applied presently but suffered for a little time to rot, lest the too much heat thereof might scorch and do hurt to the root of the Corne: this manure is to be laid on the earth when you sow it, and so the seed and it harrowed or plowed in together, which done after the order of good workmanship, there is no doubt of the encrease.

CHAP. II.

How to enrich for Corn, any barren, rough, woody ground being newly stubbed up.



If you have any barren woody ground which is newly stubbed up, and that you would convert it to arable, you shall then take a great quantity of the underwood, or worst brush-wood wch was cut from the same, and in the most convenientest

place in the field, as in the midst, or neere there about, you shall frame it into a broad hollow pyle, and then cover it all over with great sodds of earth, which done, set fire on it, and leave no part thereof (either wood or earth) unburnt, then take those ashes and spread them all over the field, so farre forth as you meane to plow up, then with a good strong plow fallow the ground as deepe as you can; and so let it rest till it be almost *May*, then take either Ferne, Stubble, Straw, Heath, Furses, Sedge, Beane stalkes, or any other wast groweth, take I say either any one, or more of these, or all together, as you stand possesse of them, and burne them to ashes and therewith cover your land the second time, and then in Summer stirre it within a Moneth after soyle it then at the beginning of October, or a little before, plow it againe, and sow it with Rye the first crop, and you shall see the increase will be very plentifull, the next yeare you may sow it with Wheate, the third yeare with Barley, the fourth yeare with Pease, Lupins, Fetches, or any other pulse, and then beginne with Wheate again, for it is credibly said, that

Wood ashes

ashes of
Ferne, Straw,
&c.

F

this

this manner of dressing these barren, woody grounds, shall maintaine and keepe the earth in good heart; and strength (in the worst places) for the space of foure years, in that which is any thing reasonable for the space of six yeares, and where there is any small touch of sterility for the space of sixteene yeares; of which there are dayly experinces in *France*, about the Forrest of *Ardenne*, and some with us here in *England* in many woody places.

CHAP. 12.

The manner of reducing again and bringing unto their first perfectionall sorts of ground which have beene overflowed or spoyled by salt-water, or the Sea-breach, either arable or pasture, as also the enriching or bettering of the same.



The difficulty
of this labour.

Here is nothing more hard or difficult in all the art of husbandry then this point of which I am now to intreat, as namely, the reducing and bringing unto their first perfection all sorts of grounds which have beene overflowed or else spoiled

by the Sea-breach, and bringing in of too great abundance of salt-water, which to some men of little experience, and free from those dangerous troubles may appear a matter very sleight, and the wound most easie & curable, & the rather, because in all my former relations and demonstrations touching the bettering of every severall sort of ground, I do apply as one of my chiefeft ingrediens or simples, by which to cure barrennesse, Salt sand, salt weeds, salt water, salt brine, Ash-

The vertues of
Salt,

es, Lime, Chaulke, and many other things of salt nature as indeed all meatures and marles whatsoever must either have a salt quality in them, or they cannot produce fruitfulness, so that to argue simply from naturall reason, If salt be the occasion and fruitfulness & increase then there cannot be much hurt done by these overflowes of the salt water, but that it should rather adde a fattenning and enriching to the ground then any way to impoverish it, & make it incapable of growth or burthen. But experience (which is the best Mistresse) shewes us the contrary, and there is nothing more noysome & pestilent to the earth then the superabundance and to great excesse of saltnesse; for according to our old Proverbe of *omne nimium*, that to much of every thing is vitious, and as we see in the state of mans body that your strongest poysons, as *Antimony* or *Stribium*, *Coloquintida*, *Rubarb*, and the like, taken in a moderate nature, are most healthfull, and expell of those malignant qualities which offend the body, & occasion sickness; but taken in the least excesse, that can be devised they then (out of their vitious and naughty qualities) do suddenly and violently destroy all health, and bring upon the body inevitable death, and imortality; so is it with this matter of salt, and the body of the earth for as by the moderate distributing thereof it correcteth all barren qualities, disperseth cold, and naughty vapours and yeeldeth a kind of fattenesse and fruitfulness whereby the Seede is made more apt to sprout, and the ground more strong or able to cherish the same till it come to perfection, through the sharpe, warme, and dispersing quality thereof; so beeing bestowed in too great abundance and excess, whereby the earth is surfeited, and as it were over-

The vices
which come
from salt.

The abuse of
salt in excess.

come and drowned up with too much of this naturall goodnesse, and helpfull quality, then all his proper vertues turn to egregious vices, as his wholsome sharpnesse to a fretting, gnawing, and destroying greedinesse; his comfortable warmnesse to a consuming, and wasting fierinesse, and his gentlenesse in-dispersing; to an infectious and venomous pollution, by the joynt qualities of all which together, the ground is made neither fit to receive any thing from the hand of the Husband-man, nor yet to produce or bring forth any thing of it selfe, because every good quality is abused or expelled, and nothing but unnaturalnesse and sterility left; which like a Serpent lodgeth in the ground and will suffer no good thing to have sociery with it; and these are the effects and mischiefes which are occasioned by these Sea-breaches or irrundations of the salt water.

Of salt moderately used.

No overflow of salt water good for grass.

It is certaine that although in the salt marshes, where the Sea commeth in at certain times; and onely washeth or sprinkleth the ground all over; and so departeth, there is neither want of grasse, nor yet complaint of any evill quality in the grasse, yet it is most certaine that no overflow of salt water how little or moderate soever, can be truly said to be wholsome for any kind of grasse ground whatsoever; for grasse is compounded of an infinite world of plants and simples, and most of them of severall natures and qualities, so that if it give nourishment to one, yet it may destroy tenne; neither do I find it by any of the Ancients simply and properly applied unto the grasse grounds, but first unto the arable, in which having spent its primary or first strength upon the seede (which is) great and greedy devourer or eater up of the strength

and fatnesse of the earth) it then prepares and makes the ground more able and fit to bring forth grasse, and that of the best and finest kind, for although the Masters of the Salt-marshes find a singular and rare profit in those grounds for the feeding, breeding, fattening, and sustaining of their great Flocks of Sheepe, which upon these salt grounds, they say will never rot or perish by that universall disease, yet must they not impute that to the great quantity, goodnesse, or any growth in the grasse, but to the Salt which they lick up in the grasse, and to the salt quality of the grasse, which is not only an Antidote or preservative against that noysome and pestilent mortality, but also a delightfull and pleasant food wherein those Cattell take more contentment than in any other thing whatsoever; so that I must necessarily rest upon this conclusion, that as but moderate washing and overflowing of Salt waters are no certaine or particular great helps unto grasse-grounds, especially if they be applyed thereunto, and to that purpose simply at the first, without any other preparative or working by a former meanes, as by tillage, digging, delving, or the like; so the exceeding great inundations or Sea-breaches which lye long soaking and sinking into the earth must needs be a certaine, infallible, and almost incurable cause of barrennesse, eating, spoiling, and consuming the very roots of all manner of plants, trees, and growths, by which the ground is made utterly incapable of generation or bringing forth: and therefore where these great inundations or overflowings cannot be either prevented or avoyded, but as the seasons of the year they do and must hold their courses, there I would not wish any man to bestow either his labour or his

The grounds
of the salt
Marshes.

A true cause
of barrennesse.

Where this
annoyance
is incurable.

Where it is
carable.

cost, for it is losse of time and losse of substance : but where it is to be prevented or avoyded by industry, or that those over-flowings or Sea-breaches come and happen by casualty or change, as either by the unnaturalnes, and superabundance of tides being driven in by the violence and impetuousnesse of outrageous winds, or by any neglect or breach in the Sea-wall, or other mishaps of the like nature, which happeneth sometimes scarce once in an age, at the most not above once or twice in many yeares; in these cases there is most certaine remedy, and the ground so spoyled and wasted, may by art and industry be againe reduced and brought to the former perfection and goodnesse; nay, many times amended and freed from many faults & sterile qualities, to which it was either naturally addicted, or else by chance and accident grew thereunto, by continuall wearying and imployment, without rest, or refreshing by the artificiall means of wholesome manures, or other strengthenings which ought to be applyed before those faults grew into extremities.

The manner
of the cure.

One contrary
helps another.

Now touching the cure of these grounds which are thus worne out, decayed, and made barren by these Inundations of Salt water, the owner thereof is first to draw into his consideration, that as the malignity and evill quality of the earth is grown by too much fretting, gnawing, and wasting of the Salt, so it must be allayed and qualified by a quite contrary condition, which is freshnesse: the contrary then to salt water, must of necessity be fresh water, so that you are to cast about in your judgement, and by the view, situation, and levell of the ground (which for the most part can have but little difficulty in it, because these grounds upon which the Sea thus breaketh, must ever be the lowest of all other, so that a true descent coming

ing unto it, and a true ascent coming from it, there is no hardnesse to convey any water course thereunto) look how to bring a freshnesse which may conquer and overcome this saltnesse, and that must therefore be fresh water, which by channels, ditches, furrowes, sluices, and the like, you may bring from any fresh river, spring, pond, or other freshwater course (though removed some distance of miles from the place to which you would convey it) to the very place to which you desire to have it, & with this fresh water you shall wash and gently drown over so much of your spoyled ground as you shall be able reasonably to deale withall in other costs and labours for that yeare ; and if you have plentifull store of fresh water, then having (as I said) drowned it over gently, about foure inches, or halfe a foot deepe, you shall so let it lye two or three daies, then draine away that water by the help of back ditches, or by sluices made for that purpose, which if the situation of the ground deny you, and that there is no such convenient conveyance, then you shall in the lowest part of the ground (either joyning upon some other spoiled ground, or upon the Sea-wall or bank) place a Coy, which may either cast the water into the other ground, or else over the wall and bank into the sea ; and having thus drained away the first water, you shall then open your sluices of fresh water againe, and drown your ground over the second time, and do in all things as you did before, & thus according to the plentifulnes of your fresh water, you shal drown your ground, or at least wash it over with fresh water twice a weeke before the beginning of the Spring, and if the salt water have laine long, or be but new departed, then you shall use your fresh water for some part of the Spring also.

Now some may object unto me here (and it is a matter altogether unlikely) that in some of these

Helps if fresh
water be want-
ing.

Whether brack-
ish water be
wholesome.

places where these inundations and breaches are, it is impossible either to find fresh water, and to bring fresh water unto them, because all the springs for many miles about being made naturally blackish, and the rivers by the infection of the salt tides, having lost the greatest part of their sweet freshnesse; the question now resteth, whether these blackish waters are wholesome for this purpose, I or no? To this I must needs answer, that they cannot in any wise be good for these spoyled grounds, because the earth naturally is of an attractive and drawing condition, sucking and gathering unto it selfe any thing that is of a sharpe, sweet, or softer taste, and especially saltnesse, so that being covered with those brackish waters, it will draw from them only their salt (of which it hath too much already) and no part of the freshnesse which should qualifie and amend it: therefore if either your ground be thus situated, or your necessities thus unsupplied, it is better that you rather forbear this labour of washing or drowing your earth (though it be the first, the speediest and surest cure of all other) than by watering it with infinite and unwholsome waters, rather encrease the mischief, than any way delay it.

The first time
of plowing, and
the observati-
ons therein.

How to mixe
earths.

After you have watered your ground (if it be a work impossible to be attained unto) or otherwise neglected (it being a thing not possible to be found) you shall then about the latter end of *March* plow up all the ground with a good deepe stich, turning up a large furrow, and laying it into lands, raise them up as much as you can, and make them round, then look of what nature or temper the earth is, as whether it be fine sand, rough gravell, stiffe clay, or a mixt earth, or any of these contraries together; If it be a fine sand, either white, red,

or

or brown, it matters not whether, then you shall take any clay earth which is free from these salt washings, being of a meane or small stiffenesse, and likewise of as meane and little richnesse, which being digged out of some banke, pit, or other place where least losse is to be had, you shall carry it in tumbrels or carriages to the new plowed ground, and there first lay it in heapes as you do manure, then after spread it all over the Land, and being dry, with clotting beetles break it as small as you can possibly, for this hungry Clay being of no rich and fat condirion, will so suck and draw the salt into it, that it will take away much of the evill quality, and mixing his tough quality with the loose condition of the sand, they will both together become apt for fruitfulnessse and generation.

If the soyled ground be a rough hard gravelly earth, then you shall mixe or spread upon it the best and richest fresh Clay you can get, or if there be any such fruitfulnessse neere about you, then with a good blew marle, for that is the coolest and the freshest, and will the soonest draw out the salt from the gravell, and give it a new nourishment, whereby any Seed shall be fed and comforted which is cast into it.

The mixture
for Gravell.

If the spoyled earth be of its own nature a stiffe and tough Clay, which is but seldome found so neere the Sea shoare, then after the plowing, you shall mixe it, and cover it over with the freshest and finest Sand that you can possibly get, for that will not only separate the Salt from the Clay, and take away the naturall toughness and stiffenesse of the same, which hindereth and suffocateth the tender sprouts, so as they cannot easily get out of the earth, but also by lending a gentle warmth, wil asswage the cold quality of the clay, and

The mixture
of Clay.

and make it bring forth most abundantly.

The mixture of
mixt earth.

Lastly, if the same spoiled earth be of a mixed quality, then you shall looke whether it be binding or loosening, if it be binding, then you shall mixe or cover it with fine fresh sand, it loosening, then with a reasonable rich and tough clay, for so you shall bring it to an open and comfortable temper, making it able both to receive, cherish, and bring forth the seed; which before either too much wet, or too much drinelle did stifle and bind up within the clots and mould, so as it had no strength to beare himselfe through the same.

The second
plowing.

When you have covered your lands with this mixture, you shall then plow it over againe before *Midsummer*, turning the new laid earth under the old earth, and as soone as that labour is finished, you shall then lade forth your manure or compasse unto it, in which you are to have a great care what manure you elect for this purpose, for it is not the richest and fattest manure, as your Pigeons dung, or Pullens dung, Lime, Chalke, or ashes, your Horse dung, your shovelings up on high wayes, your beasts hoves, your horne shavings, your Hempe-weede, or any other weede which groweth neere the seydge of the sea, neither your Oxe or Cow-dung, though of all before named, that is the best which doth the most good upon these spoyled grounds, because they have all in them a strong quality of saltnesse or sharpnesse, which will rather adde than diminish the evill quality of the earth, but instead of these you shall take the mudde of dried bottomes of Lakes, Ponds, and Ditches of fresh water, and the moyster or wetter such mudde or bottomes are, the better it is, or Straw which is rotted by some fresh water course, raine, or the like, by no means

Election of
manures.

The best manure.

that

that which is rotted by the urine or stale of Horfe or Cattell, for that is the saltest of all other; or you may take any weeds which you see grow in fresh Rivers, Ditchies, Ponds, or Lakes, especially those which grow at the bottomes of Willow, Sallow, or Osier trees, or you may take the old rags of woollen cloth, or any other manure which you know to be the woollest or freshest, and with any of these, or all of these together, you shall very plentifully cover your ground all over, and immediately upon the covering or laying on, see you presently plow it, land after land; for to give it any long respite after it is spread, the Sun out of his attractive and strong nature will exhale and draw out all the vertue from your manure, and so spoyle much of your labour.

The ordering
of the manure.

The third
plowing.

When you have thus manured it, and plowed it, you may then let it rest till *Michaelmas*, at which time you may plow it the last time, and then sow it with the strongest and hardest Wheat you have, of which the white Pollard is the best, and there is no question but if it be safe from a second Inundation, your crop will both be plentiful and rich, and also acquit & pay largely for all your former charges. The second yeare you need but only plow it as aforesaid; and then sow it with good Hemp-seed, and be assured you will have a brave crop arise thereof; then the third yeare you shall plow it as flat as you can, still throwing it down and not raising it up at all, and then sow it with the best Oates you can get, according to the nature and strength of your Countrey, and be sure to harrow it well, and to break every clot, and make the mould as fine as is possible, and the next yeare after your Oates, lay it for grasse, and I dare be bold, it will beare reasonable meadow;

The last plow-
ing, and the
Sowing.

The second
yeare sow-
ing and third.

Laying the
earth for grasse.

Of grazing.

dow; yet would I not have you this yeare to preserve it for that purpose; but rather to graze it with Sheep or Cattell, especially Sheepe, of which I would have you lay on good store; for it matters not how neare or close to the ground they eate it; for the next yeare it will be come to the fulnesse of perfection; and be as profitable or more profitable ground than ever it was, and then you may apply or accommodate it for what use you please, either arable, Meadow, or for continuall grazing.

And thus much touching the manner of reducing againe, and bringing unto their first perfection, all sorts of grounds which have been over-flowed or spoyled by Salt-water, or the Sea-breaches; whether it be arable or pasture; as also the enriching or bettering of the same.

CHAP. 13.

Another way to enrich barren Pastures, or Meadows, without the help of water.



IF your barren Pastures or Meadows be soeate that there is no possible means of washing or drowning them with water, you are then only to restore and strengthen them by the efficacy of manure or soyle, without any other help, and this may diverse wayes be done, as by those manner of manurings which I have formerly treated of. But to go a better and briefer way to worke, and more for the ease and capacity of the plaine Husband-man, whensoever you shall be posselt

possest of these barren pastures, if the barrenesse proceede from sand, or gravell, then some Husbands use to Clay measure measure the pasture over with the best clay they can get, first laying it in heapes, then spreading it, and lastly with clotting beetles breaking it into as fine dust as they can get it, and this labour they commonly performe as soone as they can after Haruest when the latter spring is eaten, and the earth is most bare, but if the barrenesse proceede from an hungry, cold and dry clay then the Moorish earth. measure is with the best moorish blacke earth which they can get, or with any moyst measure whatsoever, especially and above the rest when the soile that is digged out of old ditches, ponds, or dried up standing lakes, and this earth must be laid plentifully upon the ground in measure heaps, as afore-said, that is to say, first in great heapes, then after broken and disperied over the whole ground, and lastly broken into small dust, and mixed with the swarth of the ground, and this labour as the other is generally performed after the Haruest as a time of most convenience, and giving the earth a fit respire to sucke in the strength and comfort of the new earth and also having all the Winter after with his frosts, snowes, and showers, to mellow, ripen and mixe together the one earth with the other, and doubtlesse this is a most exceeding good Husbandry, and not to be refeld or carpt against by any knowing or sound judgement onely it is not the most absolute, or best of alwayes whatsoever, but that others may be found some what more neere, and somewhat more commodious.

Therefore whensoever you shall be owner of any of these barren pastures, or meadowes of what nature or condition soever the earth be, whether proceeding The best way to enrich pasture or meadow. from

from gravell sand, clay, or pestered with any other malignant quality whatsoever, to reduce it to fertility and goodnes in the shortest time, & to the most profit, about the Moneth of *March*, when all pasture grounds are at the barest, and do as it were remain at a stand between decreasing, and increasing, you shall begin then to lead forth your measure for the refreshing of these Earths, and the measure which you shall carry unto these grounds, shall be the soyle of streets within Cities or Towns, or the parings and gatherings up of the high-wayes much beaten with travell, also the earth for two or three foote deep which lieth under your dung-hill when the dung is removed, and carryed away, for this is most precious and rich mould and is not alone excellent for this use, but also for the use of Gardens, for the strengthening and comforting of all sorts of tender plants, and for the use of Orchards, for the comforting both of old and young Trees, when at any time their Rootes, are bared, or otherwise when there groweth any mislike or decreasing.

The soile of the streets or high-wayes.

Earth under Dung-hills.

To enrich gardens or orchards.

The mould of willow in trees

You shall also take the fine earth or mould which is found in the hollow of old Willow trees, rising from the roote up, almost to the middle of the tree, at least so far as the tree is hollow, for then this there is no earth or mould finer or richer.

Of all these measures, or of any one of them, or of as many as you can conveniently get, you shall lead forth so much as may very plentifully measure & cover your ground all over; you shall first lay it on the earth in reasonable bigge heapes, that the Sunne may not exhale the goodnesse out of it, and then at your best leasure, and so soone as you can conveniently you shall

shall spread it universally over the field, dispersing it as equally as you can, unless your field be more barren in one place then in another, which if it be, then you shall lay the greatest plenty where it is most barren, and the lesse where you find the greatest fertility, yet by all meanes see you scant not any place, but give every one his due; for to do otherwise would shew much ill Husbandry.

Now it is the use of some Husband-men, that what mould or earth the lade out from fixe a clocke in the morning till three of the clocke in the after-noon, that they make their Hinds spread in the evening before they go to Supper, and questionlesse it is a very good course, and worthy to be imitated of euery good Husband.

The spreading of mould.

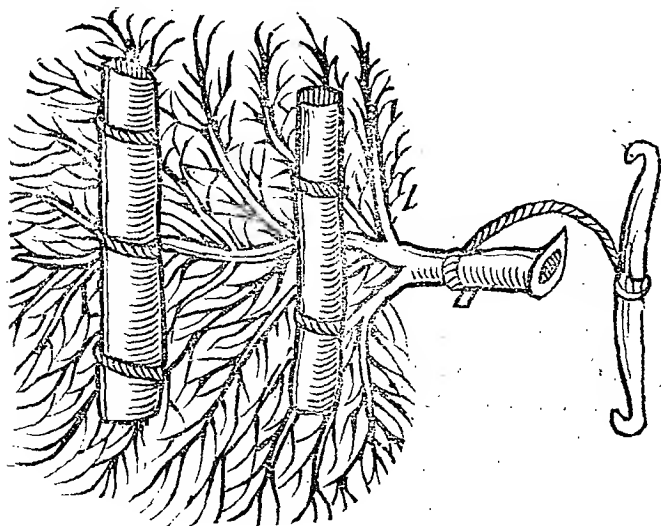
After you have laid forth your mould, and spread it all over your pasture or meadow, then you shall make some boyes, girles or other people, to picke and gather up al the stones, stickes, or other unnecessary matter which might happen to be led forth with the mould, and to pick and lay the pasture so clean as is possible, which done it is to be intended that yet notwithstanding this ground will lye exceeding rough, both in respect of the clottes of earth, which will not easily be broken, as also in respect of naturall roughnesse of these rich moulds which at this time being digged up in the wet will not easily be seperated or dissolved, and therefore when you have finished the labours before said, you shall let the clottes rest till the Sunne, and weather have dried them, then after a good ground shower (observing to take the first that falleth) you shall harrow your ground over after this manner.

Of stone gathering.

You

A new way of
Harrowing.

You shall cut downe a pretty bigge white thorne-tree, which we call the Hawthorne tree, and make sure that it be wonderfull thicke, bushy and rough grown, which done, you shall plash it as flat as you can, and spread it as broad as you can, and those branches or boughes which of necessity you must cut in sunder, you shall againe plash and thrust into the body of the Tree, binding them with cords or withes so fast thereto, that they may by no means scatter or shake out, and if any place appear hollow or thin, and cannot come to lye, hard, firm, and rough upon the ground, then you shall take other rough bushes and thrust into the hollow places, and bind them from stirring, also till you have made your plash full and equall in all places, & that all the roughnesse may as in a flat leuell equally touch the ground, when you have thus proportioned your Harrow, you shall then take great logges of wood or pieces of timber: and with ropes bind them on the upper side of this rough Harrow, that the poile or weight of them may keepe the rough side hard, and firm to earth, and then the Harrow will carry this proportion or figure.



To the big end of this Harrow, you shall fixe a strong rope, with a Swingle-tree with Treates, Coller, and Hames, and one Horſe is fully ſufficient to draw it round about the Paſture or Medow, ſo with this Harrow you ſhall Harrow the ground all over, and it will not only break all the hard clots to a very fine duſt, but alſo diſperſe them and drive them into the ground, and give ſuch a comfort to the tender roots of the young graſſe then newly ſpringing, that it will double and treble the encrease. And for mine owne part, this experience I my ſelfe have ſeene upon an extreme barren Paſture ground in *Middleſex*, where none of theſe good moulds or ſoyles could be got, but the Husband was faine to take all the rubbiſh and corſe ^{Of rubbiſh and ſweepings.} earth, even to the very ſweepings of his yard, and
G for

for want of enough thereof, to take any ordinary earth he could get, and with it he drest the ground in such sort as I have now last shewed you, and this being done in *April*, he had in *June* following as good Meadow as could be wisht for, and was the first Meadow I saw cut down in all that Country: from whence I draw this conclusion, That where these better moulds or soyles are not to be had, if yet notwithstanding you take any ordinary mould or earth whatsoever, and with it replenish your Pasture or Meadow grounds as before shewed, that without doubt you shall find an infinite commodity, and profit thereby; for even the rule of Reason, and generall experience shews us, that any fresh or quick mould coming to the root of the Grasse, when it is in springing, must needs be an infinite comfort thereunto, and make it prosper, and shoote up with a double haste; and therefore I would have every Husbandman to make much of the rubbish, sweepings, parings, and spitlings of his house and yard, as also of shovelings up of the high-waies, back-lanes, and other such places, and especially if they be any thing clayie, or morish, or sandy mixt with any other soile; for of them he shall find great use, according to the Husbandry and experience already described.

Of Soape-
ashes.

Lastly, there is not any thing that more enricheth Pasture or Meadow ground than Soape-ashes, being thinly scattered and spread over the same, and this labour would ever be done at the latter end of *April*, for then Grasse is begining to shoot up, and at that time finding a comfort, the increase will multiply exceedingly.

CHAP. 14.

*How to enrich and make the most barrenest soyle to
beare excellent good Pasture or Meadow.*



O speake then of the bettering and enriching of these barren earths, and reducing them to good Pasture or Meadow, it is to be understood, that there are but two certaine waies to compass and effect the same, namely wa-

Two waies to
enrich earths,

ter or manure.

You are then when you go about this profitable labour to consider the situation of the earth you would convert to Pasture, and to elect for this purpose the best of this worst earth you can find, and that which lyes lowest, or else that which is so descending, as that the bottome thereof may stretch to the lowest part of the continent, for the lower that such grounds lye, the sooner they are made good, and brought to profit: Next you shall consider what burthen or grasse it beares, and whether the grasse be cleane and entire of it selfe (which is the best and likeliest soile to be made fruitfull) or else mixt with other worser growths, as Thistle, Heath, Broome, or such like, and if it be burthened with any of these naughty weeds, you shall first destroy them by stubbing them up by the roots, and by burning the upper swarth of the earth with dry straw mixt with the Weeds which you shall cut from the same, then it shall be good for certaine nights both before the first and latter Spring to fold your Sheepe upon this ground, and that not in a scant manner, but very plentifully, so as the dung of them may cover

over all the earth, and their feet trampling upon the ground, may not only beat in the dung, but also beat off all the swarth from the earth, that where the Fold goeth, there little or no grasse may be perceived, then whilst the ground is soft, and thus trampled, you shall sow it all over with Hay-seeds, and then with your flatt board beetles beat the ground smooth and plaine, which done, you shall then strow, or thinly cover over the ground with the rotten staddes of Hay-stacks, and the moyst bottomes of Hay-barnes, and over that you shall spread other strong manure, of which Horse-dung, or Horse-dung and mans ordure mixt together is the best, or for want of such, either the manure of Oxen, Kine, or other beasts; and this manure also you shall spread very thinne upon the ground, and so let it lye till the Grasse come up through the same, which Grasse you shall by no meanes graze or feed with your cattell, but being come to the perfectnesse of growth, you shall mow it down, and although it will be the first yeare but short and very corse, yet it skilleth not for the ensuing yeares shall it yield profit, and bring forth both so good grasse, and such plenty thereof, as reasonably you can require; for this is but the first making of your ground, and alteration of the nature thereof: neither shall you thus dresse your ground every yeare, but once in twenty, or forty yeares, having plenty of water to relieve it. When therefore you have thus at first only prepared your ground by destroying the barren growth thereof, and by manuring, sowing, and dressing it, you shall then carefully search about the highest parts of the ground, and the highest parts of all other grounds, any way neigh.

neighbouring round about it, and somewhat above the level thereof, to see if you can finde any Springs in the same, (as doubtlesse you cannot choose but doe except the ground bee of more than strange nature,) and the heads of all such Springs as you shall finde, you shall by gutters and channels draw into those ditches which shall compasse your meadow round about, observing ever to bring the water into that part of the meadow ditch which ever lyeth highest, and so let it have a currant passage through the ditches downe to the lower part thereof, and so into some Lake, Brooke, or other channell, and in this sort you may bring your water a mile or two: Nay I have seene water brought for this purpose, three or foure miles, and the gaine thereof hath quit the charge in very plentifull manner.

Of watering
Grounds.

But if you cannot finde any Springs at all, nor can have the helpe of any Lake, Brooke, River, or other Channell of moving water, (which is a doubt too curious, as being cast beyond the Moone) you shall then not onely cast ditches about this your meadow ground, but also about all other grounds which shall lye about, and that in such sort, that they all may have no passage but into the upper part of the meadow ditch, so that what raine soever shall fall from the Skie upon those earths, it shall bee received into those ditches, and by them conveyed into the meadow ditch: and to augment the store of this water, you shall also in sundry parts of those upper grounds which are above the meadow, in places most convenient, digge large Ponds or Pits, which both of themselves may breed, and also receive all such water as shall fall neere about them, and these Ponds or Pits being filled (as in the Winter

Helpes in the
watering.

time necessarily they must needes bee at every glut of raine) you shall presently by small draines, made for that purpose, let the water out from them into the ditches, and so into the meadow ditch, and so stopping all the draines againe, make the Ponds or Pits capable to receive more water.

When and
how to water

When you have thus made your ground rich with water, and that you see it flow (as in the Winter-time necessarily it must) in plentifull manner throughall your ditches, you shall then twice or thrice in the yeare, or oftner, as you shall then thinke meete in the most convenientest places of the meadow ditch, stop the same, and make the water to rise above his bounds, and to over-flow and cover your meadow-ground all over, and if it be a flat leuell ground, if you let the water thus covering it to lye upon the same the space of foure or five dayes, or a week, it shall not bee amisse; and then you may water it the feldomer. But if it lye against the side of a hill, so that the water cannot rest upon the same, then you shall wash it all over, leaving no part unmoystened, and this you shall doe the oftener, according as the weather shall fall out, and your water grow more or lesse plentifull.

The best season for watering.

Now for the best season or time of the yeare for this watering of meadowes, you shall understand, that from *Alhallowtide*, which is the beginning of *November* (and at which time all after growth of meadowes, are fully eaten, and cattell for the most part are taken up into the house) untill the end of *April* (at the which time grasse beginneth to spring and arise from the ground) you may water all your meadowes at your pleasure without danger, if you have water enough at your pleasure, and may spend or spare at your will; yet

yet to doe it in the best perfection, and whereby your ground may receive the greatest benefit; you shall understand, that the onely time for the watring of your meadowes, is immediately after any great Fluxe of raine, falling in the Winter, any time before *May*, when the water is most muddy, foule, and troubled, for then it carrieth with it a soyle or compasse which being left upon the ground, wonderfully enricheth it, and makes it fruitfull beyond expectation, as daily is seene in those hard Countries where almost no grasse growes but by this industry: And here you must observe, that as you thus water one ground, so you may water many, having ever respect to begin with the highest, and so let the water passe out of one ground into another, untill it come to the lowest, which commonly is ever the most flat and leuell, and there you may let the water remaine so long as you thinke good (as was before shewed) and then let it out into other waste ditches or rivers. And here you shall know, that this lowest ground will ever bee the most fruitfull, as well because it lyeth the warmest, moystest, and safest from stormes and tempests, as also because what soyle or other goodnesse this overflow of water, or the raine washeth from other grounds, it leaveth upon this, and so daily encreaseth the fertility, from whence you shall gather, that at the first making of these meadow grounds you may bestow lesse cost of manure and other charges upon this lowest, flat, leuell ground, than on the higher: and so by that rule also observe to bestow on the highest ground, and the highest part of the highest ground ever the greatest abundance of manure, and so as you shall descend lower and lower, to lay your manure thinner and thinner, yet not any

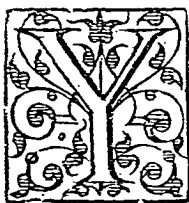
part utterly unfurnished and voyd of Compasse, yet as before I said you are to remember that these meadow-grounds need not thus much use of manure (having this benefit of water, and the first yeares dressing as was shewed in the beginning of this Chapter) above once in twenty yeares; nay it may bee not above once in a mans life time.

And here also is to bee considered, that the water which commeth from Clay or Marle grounds, being thicke muddy & pudly, is much better and richer than that which commeth from sand, gravell, or pibble, and so runneth cleare & smooth, for that rather doth wash away and consume the goodnesse of the ground, than any way adde strength thereunto.

CHAP. 15.

Of the enriching and dressing of barren grounds, for the use of Hempe or Flax.

Grounds ill for
Hempe or flax



OU shal understand there are two sorts of grounds which out of their owne natures utterly refuse to beare Hemp or Flaxe; that is, the rich stiffe black Clay, of tough, solid, and fast mould, whose extreame fertility and fatnesse giveth such a furcharge to the increase of the seede, that either with the rankenesse it runneth all into Eun and no Rinde, or else the seed being tender, and the mould sad and heavy, it burieth it so deepe therein, that it can by no meanes get out of the same, but lies choaked and consumed without profit; the other is the most vilde and extreame barren ground, which by reason of the climat wherein it lies, is so exceedingly sterile and unfruit-

fruitfull that it will neither beare these seeds, nor any other good seed; and of these two soiles onely I purpose in this place to treat, for with such soiles as will naturally and commodiously beare these seeds, I have nothing to doe, in that I have sufficiently written of them in mine *English Husbandman*, and *English Housewife*, which are Bookes onely for good grounds, but this for all such grounds as are utterly held without cure.

To begin then with the stiffe blacke Clay, which Blacke Clay
for Hempes
&c. albeit it be very rich for Corne, is most poore for these seedes, when you would reduce and bring it to beare Hempe or Flaxe, which neere unto the Sea Coast, is of greater price and commodity than Corne any way can be, especially adjoyning unto any place of fishing, in respect of Nets and other Engines, which is to be made of the same, and which being daily wasted and consumed, must likewise be daily replenished: You must first with a strong plow, fit for the nature of such land, plow up so much ground as you intend to sow Hempe or Flaxe upon, about the middest of *May*, if the weather be seasonable, and the ground not too hard: if otherwise, you must stay till a shower doe fall, and that the earth be moistned, then shall you hacke it and breake the clottes in small pieces, then with the salt Sea-sand, you shall sand it very plentifully, but if that be not to be gotten, and that you be very well assured of the naturall richnesse of the earth, you shall then sand it with the best red sand you can get or finde neere unto you, and upon every Acre of ground you thus sand with fresh sand, you shall sow three bushels of Bay salt, and then plow up againe the earth, sand and salt together, which would be done about the latter end of the yeare, as after *Michaelmas*,
and

and so let the ground rest till seede-time; at which time, you shall first before you plow it, go downe to the low rockes on which the Sea beats, and from thence, with drags, and other Engines, gather those broad leaved blacke weedes, which are called Ore-wood, and grow in great tufts and abundance about the shoare, and these weedes you shall bring to your Hemp-land, and cover it all over with the same, and then you shall plow it againe, burying the weedes within the earth.

And herein is to be observed, that in any wise you must lay these weeds as wet upon the land, as when you bring them out of the Sea, provided still, that you adde no other wet unto them but the salt water, for so they are of all soyles or manures whatsoever, the onely best and fruitfulest, and most especially for these seeds, and breed an increase beyond expectation.

When you have thus plowed over the ground, you shall then hack it againe, and then sowe it with either Hempe or Flaxe-seede, which you please, and after it is so sowne, you shall then harrow it (and not before) and you shall be carefull to harrow it into as fine mould as you can, and this mould is likely to runne fine enough, as well by reason of the fertility, as also of the mixture; yet what clots you cannot breake with your Harrows, those you shall breake with your clotting-Beetle, and such like tooles: then after the first great shower which shall fall after your sowing, you shall runne over your land thus sowne with your backe Harrowes, that is, with a paire of large Harrowes, the wrong side turned upward, to wit, the teeth turned from the earth, and the backe towards the earth;

earth; and if neede be, you shall lay upon the Harrowes some indifferent heaue piece of wood which may keepe the backe of the harrows closer to the ground, and so goe over all the earth, and lay it as smooth and light as is possible, without leaving the smallest clot that may be unbroken. Now if the ground be sowne with Hempe, you shall not thinke of weeding it at all, because Hempe is so swift a grower, and such a poyson unto all weeds, that it over-runneeth, choaketh, and destroyeth them; but if it be sowne with Flaxe or Line, which is a much tenderer seede, and bringeth forth more tender leaves and branches, then you shall watch what weeds you see spring up, and in their first growth plucke them up and cast them away, till you behold your Flaxe or Line to be growne above the weeds, and then you may let it alone also, for after it hath once gotten height, it will not be over-growne with weeds.

Now touching the other soyle, which through the extreame barrenesse thereof, refusing to bring forth any good fruit at all; you shall in all points dresse it as you dresse your plaine clayes, described in the second Chapter of this Booke, beginning at the same time of the yeere that is then appointed, or (if more necessary occasions hold you) if you beginne later, it shall not be amisse, and then at *Michaelmas* you shall plow it over the second time, and manure it with the Sea weedes, and so let it lie at rest till *March* (which is seed-time) and then plow it againe, and manure it with the Sea-weeds againe, and after the plowing, you shall hacke it, and if in the hacking you finde the earth stiffe and tough, then you shall harrow it before you sow it, then sow it and harrow it againe, breaking the earth so small, and laying it
so

Making of ill
earth heare,
&c.

so smooth as possible you can, using the helpe both of the clotting beetles, and all other tooles which may be availeable for breaking the earth, and making the mould as fine as any ashes, then after the first great shower of raine, perceiving the ground to be well moystened, you shall instead of the backe harrowes (which upon this earth may be too light) take the great rowler which is described in the Book of the *English Husbandman*, being a great round piece of Timber of many squares, drawne either by Horse or Oxen, but a single Horse is best, both in respect of much treading the ground, as also for the swift going away or drawing of the same: for the swifter it is drawne, the better it breaketh the ground, and the lighter it leaveth the mould: and with this rowler you shall runne over and smooth your ground very well, leaving noe clot unbroken, and so let it rest.

Weeding.

As for the weeding of this ground, you shall not respect it at all, for naturally it will put up no weede, the very ground of it selfe being a very great enemy thereunto, nor shall you need to dresse this ground in the forme before said, above once in eight or ten yeares: onely every seed time when you plow it (as you shall not need to plow it at any time, but seed-time onely) you shall before the plowing, cover or manure the Land with the sea-weed before spoken of, which will give strength enoughto the ground, without any other assistance.

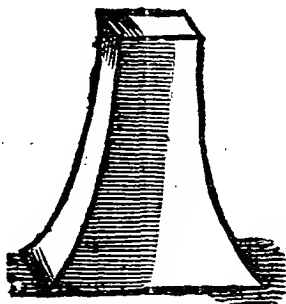
CHAP. 16.

*The manner of stacking of all kind of Graine or Pulse with
greatest safety, and least losse.*

IN these barren and hard Countries, of which I have formerly written, all sorts of buildings are exceeding costly and scarce, both in respect of the clime, which is commonly most extreme cold, mountainous, and much subject to storme and tempest, as also through the great want of Wood and Timber, which in those hard soyles doth hardly or never prosper; and therefore in such places building must be both small and deere, so that it will be very hard for the Husbandman to have house-rooms for all his Corne, but that of necessity he must be enforced to stack much, or the most part of his Corne without the doores, which albeit it be a thing very usuall in this Kingdome, yet is it in many places so insufficiently done, that the losse which redounds thereby (partly by the moysture of the ground, which commonly doth rot and spoyle at least a yard thickeesse of the bottome of the Staek next the ground, and partly through Mice, Rats, and other Vermine, which breeding in the Stack, do eate and deuoure a great part thereof; as also through many such like negligent causes) is greater than a good Husband may with his credit be guilty of, or a profitable Husband will by any meanes suffer to be lost so negligently.

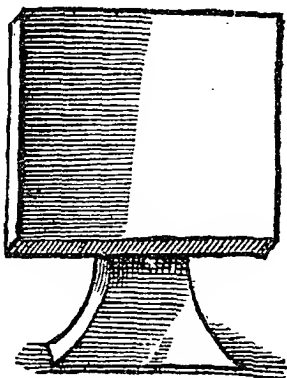
To shew then the manner how to stack or mow your corne without the doores, in such sort, as neither the
ground

ground shall rot it, nor these Vermines destroy it, nor any other losse come to it by way of ill Husbandry, you shall first cause foure peeces of timber, or foure stones, to be hewed broad and round at the nether end, like the fashion of a Sugar-loafe, or this figure.

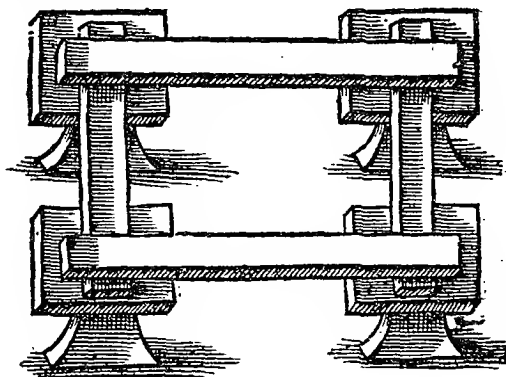


And these peeces of wood or stone shall be in length three foot or thereabout, and in compasse or bredth at the bottome, two foot, or a foot and a halfe, and at the top not above one-foot : these foure peeces of wood or stone you shall place in your stack-yard, or other convenient place neere your thrashing-floore, and you shall place them foure square, of an equall distance one from another, then you shall cut out foure smooth boards of two inches and a halfe thick at the least, and full three foot square every way, and these boards you shall lay upon the heads or narrow tops of these stones or peeces of timber, according to this Figure.

Then



Then shall you take strong over-lyers of wood, and lay them foure-square from one board to another, according to this Figure.



And then upon those over-lyers you shall lay other smaller poles close one by another, and then upon them you shall mow or stack all your Corne, whether it be
Wheat,

Wheat, Barley, Oates, Pease, or any other kind of grain, and be sure if you make your Stack handsome and upright, which consisteth in the Art and workmanship of the workman, you shall never receive losse in your corn, for the raising of it thus two or three foot from the ground will preserve it from all moisture or hurt thereof, and the broad boards which cover the foure ground posts will not suffer any Mice or other Vermin to ascend or come into the same.

Now for the manner of laying your Corne into the Stack, you shall be sure to turne that part of the sheafe where the eares of the Corne lye ever inward into the Stack, and the other which is the straw end, you shall ever turne outward, and by that meanes you shall be assured that no flying fowle, as Pigeons, Crowes, and such like, can do you any hurt or annoyance upon the same: Lastly, you shall understand, that you may make these Stacks either round, square, or long-wise, yet round is the safest, and if you do make them long-wise, then you shall set them upon six ground posts, or eight, according to the length and proportion you would have it, and after your Stack is made, you shall then thatch it very well to keep out the wet; also if when you do Stack your Wheat, you do top your Stack with Oates or other coarse Graine, it will be so much the better, and the Wheat will lye in greater safety, for no part of a Stack well made, especially a round Stack, will so soone take wet or hurt, as the top thereof.

CHAP. XVII.

The diseases and imperfections which happen to all manner of Grain.



Albeit the manner of stacking & laying up of Corn or Grain in the form before shewed, may to every one give an assurance for the safe and profitable keeping thereof as long as it endureth therein, and abideth in the care, yet because divers necessities may compell the Husbandman to thrash out his Corn, as either, for present use of Straw, Chaffe, Garbidge, or other commodities needfull unto him (as the season of the year shall fall out) I think it most necessary in this place to shew how all manner of Grain and Pulse, of what nature soever, may most safely and profitably be kept from all manner of annoyances, or corruptions whatsoever, being a work of that utility and goodnesse, that not any belonging to the Husbandman doth exceed it: Nor shall it be sufficient to shew the offences and diseases of Grain, with their cures and healthfull preservations; whilest it is in the Husbandmans possession, but also whilest it is in the earth, and at the mercy of cold, heate, moistnesse or drinesse, and not onely subject to the malignant influences of Starres and Planets, with the increasing and decreasing of the moone and her operations: but also of divers other hurtfull vermins; as birds, wormes, pismires, dories, snails, moales, and other such like: some whereof consume and devour the Graine ere it sprout, others in sprouting when the kernell is rotten, and turned to sweet substance, and others after

H

it

it is sprouted, by devouring the first tender leaves, before they have any strength to appear above the earth, being as it were but soft white threads, not changed into the strength of green, because the aire and Sunne hath not yet lookt upon it.

crows, pigeons, and birds;

To begin then with the first enemies of corne or graine, after it is throwne into the earth, there is none more noylome then *Crowes*, and *Choughes*, and other smaller birds, which flocking after the seeds-man, wil in a manner devour and gather up the graine as fast as it is sown; for as according to the old saying, *The many hands makes light work*; so many of their mouthes (being creatures that ever fly in flocks together) and their much nimblenesse in devouring, loone robbe the earth of her store, and deprive the labouring Husband man of very much profit, and the Graine which these creatures doe most consume, is all manner of white corne, as wheate of all kinde, Rye, and Oates, as also Hempe-seede, Lin-seede, Rape-seed and such like: Neither are they onely offensive during this time of sowing, but also after it is sowne and covered, digging it with their strong bills out of the earth, and so making the waste greater and greater.

The sure,

The prevention or cure for this evill, is divers, as the affections of people, and custome of Countreyes do instruct them, for some (especially the *French men*) use when they sow these grains and seeds, first to sprinkle it with the dregs or lees of their bitterest oyles, which when these devouring fowles do taste, they refuse to do any further hurt: others use to sow Pigeons dung or Lime with their seed, which sticking unto the graine, the unfavorableness thereof will make the

the fowl cast up the graine againe, and leave to doe further hurt: But forasmuch as these medicines cannot ever be had, nor are ever wholsome for every ground, the onely best and safest meanes to prevent this evill, is to have ever some young boy with bow and arrowes to follow the seeds man and Harrowes, making a great noise and acclamation, and shooting his arrowes where he shal see these devourers light, not ceasing, but chasing them from the land, and not suffering them at any time to light upon the same; and these servants are called Field-keepers, or Crow-keepers, being of no lesse use and profit (for the time) then any other servant whatsoever, nor is it sufficient to have the Field keepers, for the bare time of seed onely, whilest the grain is in sowing, but he shall also maintain them until such time as you see the grain appear above the earth, which for Wheat or Rye, because they are winter seeds, and so longer in sprouting, will ask a full month, for all other seeds which are sowne in the Spring or Summer, a fortnight is sufficient: and this Field-keeper shall not fail to be in the field an hour before Sun in the morning, and so continue till half an hour after Sun-set in the evening, for at the rising and setting of the Sunne, is ever done the greatest mischief, for then are all creatures most eager and hungry: and though the indurance may promise much pain and trouble, yet questionlesse the labour to any free-spirit, is both easie, and pleasant.

Also if your Field-keeper instead of his bow and arrowes do use to shoot off a Musket, or Harquebush, the report thereof will appear more terrible to these enemies of Corne, and the profit thereof will be a great deale more: for a shot or two of powder will

save more corn, then a weekes whooping and shouting; onely you must observe, that your field-keeper use no bullet or haile-shot, for so he may turn scarring to killing. Now touching the destruction which these creatures make of corn after it is stackt up; by tearing of the thatch, and digging holes and pits therein, to prevent that, you shall cause the thatcher to scatter upon the thatch great store of ashes of any kind, or else Lime, that as the Pigeons or Crows, teareth up the straw, the Lime or ashes will sparkle into their eyes and nares, which they will not endure, as for those parts of the Stack, which cannot be thatcht, as the sides and ends; upon them you shal pricke divers scar-crows, as dead crows, or dead Pigeons, or any other rags, or the shape of a man, made either of thumb-rops of hay or straw, or else some old cast away apparell, stopt with straw, and so fixed on the stack; also in this case you may use Clap mills, or such like toyes, which make a great noise; But to conclude the best prevention for these creatures (if you want ability to mainrain a Field-keeper) is to take long lines of pack-thread, and in them to knit divers feathers of divers colors, especially white ones, & with little stakes so to fasten them over the Corn, that with every breath of wind the feathers may dance and turn about, and the nearer that these Blinks, or scars come to the ground (when the corn is new sowne so much the better it is, least the fowle finding away to creepe under them, begin not to respect them; so that a hand or two from the ground is sufficient, provided that the feathers and scarres have liberty to play and move.

But if it be to save corn in the ripening, that is to say

lay a little before it be reapt, when the eare begins to harden, or when it lieth in single sheaf upon the land, for then fowl and birds do as great mischief, as at any other season, it shal then be fit that you raise these lines or scars upon higher stakes, so as they may play as much above the eares of corn, as before they did above the earth: and among these scars thus made upon lines in sundry parts of the field, you shall upon other stakes, place many other bigger scars, as dead crowes, pies, gleades, pigeons, or such like, as also the proportion of man formerly shewed you, or any rags of cloath being black, fowl, and vgly, like bakers malkins, & then this, there is no safer way for the defence of grain, or corne, from these birds, and such like.

The next great devourers or consumers of graine Of pismires. are Pismires or Ants, which although it be but a little creature, yet it is so labourfome, that the graine which they carry away or destroy by eating, amounteth to a great quantity, and the mischief which these little Vermines do, is, after the corn is covered in the ground, and before it sprout, for they creeping in at the little chinkes of the earth, and finding the corne, either drag it out, or eat it; so that it cannot grow, & the graine which they most hurt, is all manner of white corn, especially your finest and smallest Wheat, for the skin or hull is thinnest, and the kinnell whitest and sweetest: also to barly they do much hurt, especially that which is fullest and best, and likewise to Rye, Hempe-seede, Lin-seede, and Rape-seede, as for Oats, because it is double hull'd, and also your great hole straw Wheate, and Polard wheat, which is thick huld, their hurt is not so much to them, and unto pulse

nothing at all, because they are too heavy, too thicke skinned, and too bitter in taste.

The cure.

The best cure and prevention for these Pismires is to search your Corn-fields well, especially under hedges and old trees and on the top of mole hills, and if you find any beds or hills, of Ants or Pismires, presently after sun setting, with hot scalding water to drown the beds or hills, or with wet straw and fire, to make such a smoak upon them, as may smother them to death, also if you manure your Corn-lands with ashes, lime or salt sand, you shall be well assured it will never breed Pismires.

Of Dores.

Next unto these, your Dores or great black Clocks are vehement destroyers of all kind of Corne both white Corn and Pulse, whilst it lyeth dry in the earth, and before it sprout, for after it beginneth to rot, they do no more touch it, and these Dores destroy it in the same manner, as the Pismires do, by creeping in at the small crevices of the earth, and finding the grain do as long as it is dry feed thereon, and though they are no hoarders, or gatherers together of the grain, keeping it in heapes in dry places as the Pismires and other vermine do, yet they are great feeders thereon, and that continually, besides they will ever chuse out the fullest and best Corn, leave the leaner, whereby they do the Husbandman double injury, as first to devour, and then to devour but the best only.

The cure.

The cure or prevention for these Dores, or blacke Clockes, is in Seed-time to make great smoakes in your corne-fields, which will presently chase them from hence, for they are the greatest enemies that may be to all manner of smoak: but if that be not sufficient,

then

then immediately before you sow your Corn, you shall very lightly sow your land with sharp Lyme, and whensoever the Dore shall find the smell or tast thereof, presently he will depart, or if he eate of the Graine that toucheth the Lyme, it is as present poyson unto him, and there he dyeth.

¶ After these, your Field Rats and Mice are very vehement destroyers of all manner of Grain or Seeds before they sprout, especially all sorts of Wheat, and all sorts of pulse, because for the most part those kind of Grayns in many Soyls are sown under furrow, and not harrowed, so that the furrows at first lying a little hollow, these Vermines getting in between the earth and them, will not only devour and eat a great part of the Grain, but also gather together great heapes thereof into their nests, as is often seen when at any time their nests are found, some having more, some lesse, according to their labours.

Of Field Rats
and Mice.

And albeit in other soyles where the grayn is sowne above furrow, and so harrowed in, and laid much more close and safe, they cannot do so much hurt as in the former, yet even with these they will with their feet dig out the corn in great abundance, and though in lesse measure, yet do hurt that is unsufferable; so that to conclude, neither Rye, Barley, Oats, nor any other smaller and more tender seeds, are free from their annoyance and destruction.

Now the cure and prevention for these Field Rats, or Mice, are divers, according to the opinions of divers Authors, and divers of our best experienced Husbandmen: for some use in the Dog Dayes, or Canicular Dayes, when the fields are commonly bare, to search out the holes and nests of these Rats and Mice, which

The cure.

are easily known, being little round holes in the earth made so round and artificially as if they were made with an *Auger*, no bigger then the body of the creature that was to lie in it: and into these holes they use to put a few *Hemlock seeds*, of which when the beast tastes it, is present death unto them: Others use to sprinkle upon the land, *Hellebor* or needling powder mixt with Barley meal, of which the Mice and Rats will greedily feed, and it is deadly bane and present death unto them.

Lastly, (and which is the best medicine) if you take a good quantity of ordinary green glasse beaten also to powder, and as much *Coppor* as or vitriol beaten also to powder, and mixe them with course honey, till it come to a paste, and then lay it in the holes, and most suspicious places, and it will neither leave Rat nor Mouse about all your fields, but sodainly destroy them.

Of Wormes.

The next great destroyers of Corn and Grain, are *Wormes*, and they destroy it in the sprouting; then when the ground hath rotted it, and the white or milkie substance breaking open the upper husk, shooteth forth in little white threds at both ends, upon which whilest it is so moist and tender, the *Worm* feedeth extreamly, and so devouring up the substance or sperme, is the cause the Corn cannot grow or get out of the ground, and these *Wormes* being as it were the main citizens within the earth, are so innumerable, that the losse which is bred by them is infinite.

The cure.

Now the cure or prevention for these *Wormes* is diversly taken: for some Husband men use but onely to strike into the Plow Rest, and under the lowest edge of the shebord certain crooked spikes of iron of great nailes half driven in, and turned back again, with which as the Plow runs tearing in the ground, and turns up the

the furrow, those pieces of Iron kill and tear in pieces such Worms as are either within or under the furrow that the Plow casts up, and this is sure a very good husbandly practice, but not sufficient for the destroying of such a secret hurtful vermine which is so innumerable, and lies so much concealed: therefore, more curious husbands use besides this help of the Plow, to take Ox dung and mix it with straw, and then to burn it up in the land, making a great smoke over all the land, immediately before you plow it for seed, and it is thought that this will kill all the Worms which lie so high in the earth, as to hurt the Corn.

Others use before they make either the mixture or the smoke to wet the straw in strong Lye, and then adding it to the Dung, the smoke will be so much the stronger, and the Worms killed the sooner; or if you sprinkle strong Lye upon your seed before you sow it, there is not any worme that will touch the grain after: Also, if you take Hemp and boyl it in water, and with that water sprinkle your seed before you sow it, not any worm will come neer to touch it.

Yet it is to be observed in this rule of wetting your Seed Corn, that by no meanes you must wet your Seed Rye, for it is a Grain so warm and tender that it will neither endure cold, wet, nor stiff ground, inso-much that the Plowman hath a Proverb, that Rye will drownd in the Hopper; that is to say, it must neither be sown on wet ground, nor in a wet day, since present showers are apt to destroy.

Lastly, it is thought that oft plowing your ground in the wane of the Moon is a very good meanes to destroy both.

Touching that practice which many use to gather the
worms

worms from their lands at Sun-rise, in bright dewie mornings, and Sun-set when the wormes couple above the earth, I hold it more fit for small gardens, then larg Corn fields.

Of Snailles.

The next great destroyers of Corn are Snailles, and they destroy it after it is sprouted, feeding upon the tender white threds and fions which start from the seed and would rise above the earth, being the stemme or stalk on which the eares should grow (were it not devoured and eaten up by these Snailles, and such like *Vermine*) as soon as it begins to pæpe up, or as it were to open the earth, whereby it is driven back and forced to dyc in the earth: for these creatures sucking upon the tender sweetnesse, deprive it both of life and nourishment.

The cure.

The cure and prevention for this evill, is to take the soot of a Chimney, and after your Corn hath beene sown a week or ten dayes, or within two or three dayes after the first shower of Rain which shal fall after the Corn is sown; you shall sow this soot of the Chimney thinly over the land, and not a Snaille will endure to come thereon: Others use (especially in *France*, and those more fertile Countries) to take common Oyle lees, and after the Corn hath been sown and is ready to appear above ground, to sprinkle it all over the lands, by which meanes no Snayle or such like creature will endure to come near the same.

Of Grasshop-
pers.

The next great destroyer of Corne is accounted the Grasshopper, and he also destroyeth it after it is sprouted, and appeareth above ground, as the Snail doth, but somewhat more greedily, for he not only feedeth on the tender white strings, but upon the first green leaves that appeare also; by which meanes the Corne is not
able

able to spring or bring forth a stemme or stalk to bear the ear upon; or if it do put forth any, yet it is so small weak and wretched, that the ear growing on the same, is withered and lean, and the grain dry and blasted, and no better then chaff; nor is there any corn that escapeth the destruction of the grasshopper, for he generally feedeth on all: first, on wheat and Rye, because they are the earliest, then on the barley and oats, and lastly on pulse upon whose leaf and blossome he feedeth, whilest the first is sweet and pleasant, or the other green.

Now the cure or prevention for these creatures, The cure. is according to the opinion of some Husbandmen, to take Worme-wood, and boyle it well in water, till the strength of the Worm-wood be gone thereinto, and then with that water in the moneth of May to sprinkle all your corn over when the sun is rising or setting: and not any Grasshopper wil come neer, or annoy the same. Others use instead of Worm-wood to boile centaury, and to use the water thereof in the same manner as aforesaid, and find an equall and right profit in the same, but it is most certain that any bitter decoction whatsoever used and applied as aforesaid, wil not leave one Grasshopper about your Fields, for any bitternesse is such an enemy unto them, that they cannot live where they feel any tast thereof.

The last offence of living creatures belonging to Of Moales. Corn or Grain are Moales, which not only feed upon it after it is sprouted and spindled by eating up the roots thereof, and so consequently by killing the whole Corn: but also by their digging and undermining of the earth, do roote up the Corne and destroy it in most wonderfull manner, for where they make their haunts, or are suffered to digge, there they wil destroy almost

almost half an acre in a day neither made they choice either of Ground or Grain, for all grounds and grains are alike, if the ground be not too wet, or subject to inundation, or over-flows (as for the most part corn-ground are not) for above all things Moales cannot endure wet ground or earth of too moist quality.

The cure;

Now the best cure or prevention against these creatures, is to find out their trenches and passages which are most plain and easie to be known by the turning up of the new earth, and digging crosse holes in the same, to watch either the going forth, or the coming back of the Moal, and when you see her cast, to strike her, with an iron fork made of many grains, as eight or sixe at the least, and so to kill and destroy them; which still is so generally known amongst Husbandmen, that it is become a trade and occupation among them, so that it needs no further discription, & the rather, in as much as three or four pence a score, you may have any ground cleansed of Moals whatsoever.

Offences from
the influence
of the heaven.

Now there be some others which have not this art of killing or catching of Moales which onely do take brimstone and wet stinking straw, or any thing else that will make a stinking smoake, and putting fire thereto, smoak all the places of their haunts, and by that meanes drive them all clean away from the corn lands: many other practises they have, but none so good certain, and probable as these already declared.

Thus far I have spoken of those offences which proceed from living creatures, I will now intreat of these which come and grow from the Influence of the heavens, being malignant vapours which striking into the earth, do alter the sweet and pleasant nourishment thereof, and change it, into bitternesse and rottennesse,

where

by the Corn is either flaine out-right, withered and made lean and unkindly, or else the kernell turne to a filthy blacknesse, being bitter, dry, and dusty, like unto smoak, which the Husbandmen calleth smuttinesse, or mildewing, commeth another way, as namely by over-ranknesse, or too much fatnesse of the earth, and this happeneth most commonly only to wheat, for if blacknesse happen to any other Grain; it commeth of blastings, or other malice of the Starres, for ranknesse of the ground in Barley, Rye, or Oates, only makes them lye flat to the ground, the stalke not being able to support the multiplicity of the eares, and so by that means the graine wanting his true nourishment, grows light, withered and of no validity; now that this is most easie to be found out; the ranknesse of the growing Corne, rising as it were in close bundles together, and the deep blacknesse of the greene blades, will with small travell shew you.

Of smuttinesse
and mildew.

This to cure and prevent, it shall be good before you sow your Graine, to sow your land lightly over with chalk, for that wil abate his over ranknesse.

The cure,

There be other malignant qualities which proceed from the influences of the Heavens, or rather from the qualities of the Planets or Elements, which do many dangerous hurts unto Corn, as namely the Haile, the Lightning, the Thunder, or the Planet-stroke, or blasting, for all which the ancient Husbandmen have suggested severall Cures, as namely for the Haile, to plant the White-Vine, or stick the branches thereof in the Corne-field. For the lightning, to close a hedge-Toade in an earthen pot, and burying her in the Corn-field, or to hang up the feathers of an Eagle, or a Scale skinne, or to plant Lawrell therein: For the

Additions,

Thunder

Thunder, to ring Bels, to shoot of great Ordnance, or to burn stinking weedes in the Corne-field : And for Blasting, to take the farre home of an Oxe, and mixing it with dung, to burn it in the Corn field, or to take the branches of the Bay tree, and to plant them in the corne-field: but in as much as all these, and many other the like, smell rather of conjuration, charme, or exorcisme, then of any probability of truth; I will neither here stand much upon them, nor perswade any man to give further credit unto them, then as to the vapours of mens braines, which do produce much many times out of meer imagination; and so I will proceed unto those things which are of farre greater likelihood.

Of frosts.

The next evill which happeneth unto Corn or grain is that which cometh by frosts and sharp nipping colds, which starving the root, and binding up all nourishment, maketh the corn dry, wither, and never prosper; and then the violence of the frosts, here is nothing more bitter to plants and seeds, for ever Rasor-like it cutteth the veins and sinews in pieces, and as sharp needles pricketh the heart of every growing thing, for as the fire which is most hot, when it rageth, burneth, and consumeth all things, so the frost which is most cold when it continueth, starveth, and choaketh, or stifleth whatsoever it embraceth.

The cure.

Now the cure or prevention for those evils which do happen to graine by these great frosts, is as some Husband-men suppose, to cover the land over when it is sowne, with ashes, others spread straw or rotten litter upon their Corne, and not any of them but it is sufficient to prevent the worst injury that frost can do.

The

The most malignant quality which offendeth grain ^{Myfts and fogs.} is myft and fog, which being naughty vapours drawn from the infected parts of the earth, and fall upon the corn, do not onely make the graine leprous, but also infecting the better earth after the kindly nourishment thereof, and as it were distilling corruption in the veins, makes al that depends thereupon most leprous and unwholsom, and thereby altereth the quality, quite turning sweernesse into bitternesse, fulnesse into emptinesse, and goodnesse into badnesse, to the great losse of the Husband men, and the much disreputation of the ground.

Now the cure and prevention of this evill, according to the opinions of all the best Husbandmen, is to ^{The cure.} take weeds green, the twigs of bramble and other brush wood, wet straw or any such like stuffe, and binding them in great bundles, to put fire thereto, making a great and violent smoke, and then taking the advantage of the wind, to walk up and down the field and smoak it which is thought a certain remedy to take away those inconveniencies which happen by violence and poison of these myfts and fogs.

Now to conclude, the diseases and infirmities ^{Corn ready wet.} which happen to corne whilest it is in the field, there is not any formerly spoken of more dangerous, or of vilder quality then the reaping, mowing, or gathering in of Corn, wet, or too greene, and unhardned, for such moisture, when the corne is sheafed up close together, or stackt or mowed up, forthwith gathereth heat, and either setteth the corne on fire, or else the moisture being of lesse quantity, and not apt to flame, yet it corrupteth the graine and straw, and breedeth a stinking mouldinesse or rottennesse about it: so that
the

the grain either becomes dung and dirt, or at least so stinking and unfavory, that it is good for no use or purpose, as is dayly seen where carelesse husbands gather in their grain without respect or government, making the old proverb good, that hast ever brings wast.

The cure.

The cure and prevention of this evill, is the wel husbanding and managing of the harvest, as first with a carefull and well judging eye to look upon your corn, and to know by the hanging downward of the care, (looking as it were backe to the ground) and by the hardnesse of the graine, whether it be ripe or no; then to look into the cleannesse of the corne, as whether it be full of greenes, as grasse, weeds, and such like: or clean of it self without any mixture: if you find there be any weeds mixt with it, then you may reape it so much the sooner though the kernel be not so wel hardened as you would wish, and above all things have a care never to shear Corne in the raine or wet, no not so much as with the mornings or evenings dew upon it, but even in the heat and brightnesse of the day. Then having reapt your Corne so full of grasse and weedes, you shall by no meanes sheafe it, but spreading it thin in the sunne, let the grasse wither all that day, which when you perceive to change colour and grow dry, then bind it up in sheafes, and let it lye single a day, that the wind and Sunne may get into it, and dry the greenes more sufficiently; then lay it in stouckes of six or eight sheafes a peece, and in those stouckes, and turne the eares so inward that the other bigger ends may defend them from all rain, wet or dew that may fall upon them; then a day or two after, lay them in stouckes of twenty or of four and twenty sheafes a peece, and in those stouckes, let them take a sweate, then break them open

open in a bright Sunne shine day, and letting the aire passe thoro w them to dry them, forthwith leade the graine home, and house it or stack it in such sort as was shewed in the former Chapter, and be sure the grain thus ordered and dried can never take hurt: but if the season of the year fall out so extraordinary evill and full of wet, that by no meanes you can get your Corne dry home (which although it be seldome seene yet it is possible to be seen) in this case you must bring it home as well as you can, and having your Kilne well ordered and bedded, you shall lay as many sheaves thereon, as it can containe, and turning and tossing them over a very gentle fire, by slow degrees dry them very perfectly as near as you can, with no greater a heat then that which the Sunne giveth, and then mowe and stack them up at your pleasure, for the ayre will sweeten them againe, and take away all smell of smoke or other annoyance; onely observe, not to stack them up whilst the fire or heat is in them, but when they are cold, and so they will be as sweet as may be.

Now it is not amiss that I speake here a word or two of washt Corn, or the washing of Corn: True it is (as before I have written) that all sorts of Wheat whatsoever are subject, either by the rankness of the ground, blasting, or else mildewing, to a kind of filthy footy blackness, as is already shewed; and this footy Corn is taken two ways, generally and particularly: generally, if the whole land be stricken, and no corne saved, but all spoyled, which is called mildewed; or particularly, where but some certain eares are struck, or some certain part of the grain, as when it is blacke at both ends, yet full and sound in the middlest, and this

this is called smutcht corn, being disfigured in part, and not in all. This smutcht Corn which is stricken here and there, if the blasted eares be not culled out from the other, (which to do is an husbandry exceeding good and very worthy) when it commeth under the flayle, the dust of those black blasted eares will so foul all the rest of the corn, that it wil look black and ill favored, & so become unserviceable and unmarketable; for the blasted corn is both bitter and unwholsome: In this case you must of force wash this corne, and you must do it in two or three waters, till you see all the blacknesse quite gone; which done, then drain away your water cleane, and laying the corn on faire window cloathes, or coverlids, lay it in the heat of the Sunne, and so dry it againe till it be so hard that it will grind: But if the time of the yeare will not serve for the Sunnes drying it, then you shall dry it on a Kiln with a very soft and gentle fire, and then coole it in the ayre to recover the sweetnesse again, and then the Corn is as servicable as any other, onely for seed it will by no meanes serve, both by meanes of the blasting, which makes the kernell imperfect at both ends where it shoud sprout, as also the too much drying thereof, by which it is so much hardned, that the ground hath no strength to resolve it, therefore it is the office of every Husbandman when he chuseth his seed corn, eschew by all means this washt corn as a grain that is lost in the earth, and will by no means grow.

To know
washt corn.

Therefore that you may know washt corne from all other corn, and so not to bee cozened by any deceit in the ill Husbandman, you shal take it up into your hand, and if the corn look bright, cleer, and shining,

being


being all of one entire colour, without change or difference, then be sure the corn is unwasht and perfect.

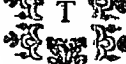
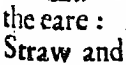
But if you find it look whiter at the ends then in any other part of the corn, and that the whitenesse is black and not shining, so that there is a changeable colour in the corn, then be assured that the corn is washt, and then by no meanes apt for seed or increase.

Againe, put three or four graines into your mouth, and chaw them, and if then the taste be sweet and pleasant, and grind mellow and gently between your teeth; then is the corn not washt: but if it have a bitterish, or fleshy raw taste, and grind hard between your teeth; or with much roughnesse, then hath the corn been washt, and dryed againe, and is not good for seed: also when corn is more then ordinarily moist, or more then ordinarily dry, both are very ill signes, and shew either imperfect corn, or imperfect keeping, for the best and good corn indeed, ever holdeth an indifferent temperature, betwixt drynesse and moisture.

CHAP. 18.

How to keepe all manner of Graine, either thrasht or unthrasht with least losse the longest time, and how to preserve it from all infirmities and vermine in the house or garner.

 proceed to the keeping and preserving of Corne and Graine, it is to be understood, that it is to be done two severall wayes; that is to say, in the eare, and out of the eare: in the stacke, when it is joyned with the Straw and Chaffe, or in the Garner, when it is cled and dressed.

  Keeping of
Corn two-
fold.

Keeping corn
in the ear or
in the chaffe.

Touching the keeping of Corn in the Ear or in the Stack, there is no better or safer way then that already described in the 16. Chapter, being free from all offences whatsoever that can come to hurt it.

Now there be others that cut off the eares of their Corn, and then put them into great Chests or Hütches of wood (such are very frequent and much in use in *Ireland*, and other Countries where War rageth) and so keep it sweet and good many years: Others use to beat it out of the Ear, but not separate it from the Chaffe, and then laying a lear of the Straw more then a foot thick, to lay a good thick lear of the thresht corn, then another lear of Straw, and so a leate of thresht Corn; and thus lay Leare upon Leare, till you have made up your Stack, in such proportion as you shall think convenient; and this will keep all kind of corn, or Grain, or other Seeds, sound, sweet, and fit for any purpose, at least a dozen yeer, or more, as some have supposed, without either too much drying, withering, moistening, or molding; and sure this is a very excellent way for the storing up of much Corn in a very little roome, and may as well be done with Corne as with Straw: onely it is not to be done in Barne nor House, because Mice, Rats, and other kind of Vermine will work much destruction thereupon, but on a Stack or Hovell made and proportioned in such form as was shewed before in the sixteenth Chapter, and so it will stand safe without all annoyance, as long as it shall please the owner to keep it; sure I am, it will last thus fully twelve yeeres, yet some Authors affirme it will last fifty years, but that is a space of yeares beyond my tryall.

Touching the keeping of Corn after it is thrasht and drest, it is divers ways to be done, as by stoage or place of leare, as Garners, Hutches, and such like : by labour and industry, as with the shovell, or else by device or medicine.

For Garners, they be made divers ways, according to the nature of the Country, and custome of the people. Keeping of
corn out of
the Eare or
drest.

Some are made with clay and lome troden with hair, straw chopt, and such like : but these are the worst and do soonest corrupt Corn, for although they are warm, which is a great preservation to Corn, yet they yeeld dust, and from that dust is bred fleas, mytes, weavels, and other Vermine which spoyle Corne, and make it easily rot.

Others are made of stone and lyme, but they are subject against wet weather, to yeeld forth a moyst dew which corrupteth and rotteth Corn.

Others are made of Brick and Lyme, and they are very good against the weavell, and other small vermine, but the lyme is sharp, and so consequently very unwholesome for all manner of Grain.

The best Garner then that can be made to keep all manner of grain in, is made of plaister, burnt & brought into mortar. and so raising it up with the help of small stones hidden & placed in the midst of the wal to make both the inside and outside of the Garner of smooth plaister, no stone being seen, but hidden at least two fingers thick on each side, and all the bottome also must be made of plaister ; for no floor keepeth corn so well, of what kind soever it be, and these Garners would be placed as neere as you can to the backes or sides of Chimneyes, or as neere the ayre of the fire as you can conveniently, for as there is nothing more cold

then plaster, yet it is ever so dry & free from moisture, that with no change of the ayr or weather it relenteth, but keepeth the Corne ever in one state of goodnesse, whilst the warme standing thereof, is such a comfört in the winter, and the naturall coolenesse of the thing so soveraign in Summer, that the grain ever abideth in one state without alteration.

of hutches.

Now for hutches or great chests, byngs, dry-fats, and such like, they are made of old, dry, and well seasoned Oak-boards, plained smooth, and close joyned & glewed together, with covers and lids made also very close, whereby little or no ayre can come in: some of these, great byngs, or hutches, made of dry boards, are made open and without covers, but they are not so good, for the ayr cooling the upper part of the corn, and the middle part sweating breedeth corruption, or mustines, which hurteth and spoyleth the corn: besides, they are somewhat too warme, and thereby make any green corn apt to corrupt and smell.

Touching the use of Garners and Hutches, they are principally to keep Malt after it is dried, or Barley which is for the use of bread or meale: and here is to be noted that the best manner of keeping malt, is to keep it in the corn, that is to say, in the dust and other filth which commeth with it from the kilne, as thus, when first you lay your malt on the kilne to be dried, you know there is at one end a certain sprout or small thred which growes from the corn, and it is called the come, which by the rubbing and drying of the malt falls away, and leaves the corn clean, and snug of it self, and when you trim and dresse up your malt for the mill, is winnowed and cleansed away: this you shall preserve and put altogether into your Garner

or hutch, which will so mellow and ripen your Malt, that in the spending thereof, a peck will go further then a peck & a half kept of a contrary fashion, & although some are perswaded that this come or malt-dust, is a great breeder of the worm or wevell, by reason of the much heat thereof, being indeed of the purest of the heart of the corn; yet it is not so, unlesse some danknesse or moysture do get to the corn, and then it breeds wevells in infinite abundance, and therefore by all meanes, be sure that your garners, and hutches do stand exceeding dry, and then there is no feare of the losse of corn, nor shall you need to dresse or winnow your Malt but as you spend it.

Lastly, here it is to be noted, that although I here joyn garners, hutches, chests and byngs together, yet I make them not all of equal goodnesse; for the Plaster garner is absolutely the best of all, the close hutch or chest next, and the open byng last; yet any or all sufficient enough to keep malt, barley, or small seeds, divers years without imperfection.

It is written by some of the ancientest Authors, that Wheat hath been kept in these close hutches or chests sweet, the space of fifty years, yet I hold the rule somewhat doubtfull, both because Wheat of it self lying so close packt together, is apt to heat and sweate, and that heate commonly turneth to saughtinesse, and the sweat to corruption; but that it may thus be preserved from wormes, wevells, mytes, and other vermine, breeding in corne, it is doubtlesse and infallible.

Now for the preservation of wheat, which is the most principall graine, of greatest use, and greatest price, and therewithall most tender, and aptest to take

To preserve
Wheat.

hurt the experiments are diverse, as mens fancies, and practises have found out, for some Husband-men hold opinion, especially the *French* and *Spanish*, that if you take the lees of common oyl (so it be sweet) and sprinkle it upon your wheat as it lies, either in the garner, or upon the floor, that it will preserve it from all corruption and annoyance whatsoever, nor doth it preserve wheat only, but all other manner of grain whatsoever; nor doth it preserve corn alone from milchief, but if corn by casualty be tainted or hurt, it doth recover it again, and brings it to the first sweetness; and if either worms or weavels be bred in it, the oyl presently kills them, and makes the corn from that mischief: as for smaller seeds as hemp, lise and rape, this oyl doth not only keep them long and sound, but also feeds and nourishes them, and makes them better, either for the ground, or for use, either in the mill, or in medicine.

There be others that use to take chalk, and beat it to powder, and then scatter it amongst their Wheat, when they put it into the garner, and have found that thereby their grain hath beene wonderfully preserved from all imperfection, and surely there is great reason for the same, because the driness of the chalk drinketh up the moysture which sweateth from the grain, and is the first breeder of all putrifaction: also it cooleth and asswageth the immoderate heat which is ingendred in the corn, by reason of the pack and close lying together.

Again, there be others which use to lay great store of worm-wood amongst their wheat, which likewise preserveth it from all annoyances, especially from wormes and weavels, as also from Mice, Rats, and such devouring vermine; neither will the Corn corrupt

rupt or grow faughty, as long as the *Worm-wood* remaines amongst it: In *Italy* the carefull Husbands use to take a certain dry earth or clay, called earth of *Onithus* or *Cernithw*, and this earth they beat amongst their *Wheat*, and then put it into the Garner or Hutch and it will keep it sound and sweet divers yeeres together; then when they have occasion to use it, with small reeing sives to dresse it from the Corn, and so preserve the dust, which will last and serve you many yeers together, even almost an age as some have reported, and is at this day to be seen in many parts of *Italy*, and other places.

Again, I have for mine own part seen in the Island of the *Azores*, certain very great and large Caves, or pits made under the earth, of the fashion of a *Spanish* earthen leare, that is to say, great and spacious in the midst, and narrow both at the top and bottome, like a brasse pot, or great glasse viall, and made as smooth within as may be, and in these caves or pits, they first lay chaffe, and then their thrasht *Wheat*, filling it up full to the top, or within a handfull thereof, which they fill again with Chaffe, and then closing the top with a broad stone, they cover it over with earth so close and unperceivable, that you may walk or travell over it without any suspicion; and for mine own part, I have my self digged up many of these pits, and found great store of *Wheat*, both in the High wayes, and other most suspicious places; and surely it is thought, and experience in those places makes it good, that in these Caves or Pits you may keepe *Wheat* as long if you please, as *Pliny* speaketh of, which is an hundred, or an hundred and twenty yeares, without hurt or putrefaction either of heate, moysture, Wormes, Weavels,
or

or any other vermine whatsoever which consumeth or devoureth Corne ; yet how I may recommend this experiment to our nation I am uncertain, because the much moisture of our climate, and the cold rawnesse thereof promiseth a contrary effect ; for the great enemies unto grain, are violent cold and moisture, and with us it is very difficult to make any caverns under the earth, but they must be subject unto both: therefore onely to those which live in hot sandy Countries, high, and free from springs or waters, or in dry and rocky grounds, where these mynes or hollow places may be hewed out, as in a main and firm quarry, I recommend the tryall of this practise, with this assurance, that where the ground is fit for that purpose, as in any of your sand grounds or gravelly earths, as in *Norfolke*, *Middlesex*, *Kent*, and many other sandy climats; or in rockie situations, as in *Nottingham*, *Bathe*, *Bristol*, and such like, you may keep your wheat good, sound, firm, and free from all annoyances, even as long as you shall please to keep it, both without putrification in it self, or waste made by other deuouring worms and vermine but if in a more moist place, as in a clay or other mixt earth, which ever is vomiting wet and dewish humors, you are forced to approve this experiment : then you must necessarily lyme all your cave or hollow myne within, at least half a foot thick with tyle shred ; and plaister laid wall-like together, and then the plaister dawb'd at least three fingers thick above all, and so you may keep you Corn as safe and as sound as any hot soil whatsoever, but without it your Corn will not endure a week without rottenness, faughtiness, mouldiness, and sinking.

To conclude, having shewed you all the most approved

ved & best experiments for the keeping & preserving of wheat, there is none better, or so good as this poor silly plain on which I will here deliver: and that is, first, as near as you can, reap your wheat at the elāge of the Moon, for wheat which is so reaped, is seldom or never subject to losse or putrifaction, being gotten dry, or in husbandly manner ordered and handled) because that celestiaall body hath such a power and influence in the growth of Corn and seeds, that as she groweth so they grow, and as she waneth, so they abate and wither.

And truly for my own part, in my poor husbandry, I have made this observation, that I have reaped Corn at the beginning of the wane (to mine eye and judgement) great, full, and bold, as the Plow-man calls it, and within few days after, when it came to thrashing, I have found it most poor hungry, and small corne: nor could I give or find any other reason for the same, but that it was reaped, in an ill and most unseasonable time: for on the contrary part, I have ever found that corn reaped upon the change, being ripe, full, and every way fit for the barn (and the weather fair and dry above head) it hath never altered, but kept his first and perfect goodnesse, so that I cannot chuse but in this case think the observation of the Moon to be a thing of great effect and validity, appointed by God as a second meanes for our help and profit: when therefore your corn is thus seasonably and well got, you shall thrash it, winow it, and dresse it so clean as you can, then carry it up into your chambers, or lofts appointed for that purpose, and whose floores by all meanes I would wish to be cast of the best plaster; for boords too hot, and clay is too apt to breed vermine: One this plaster floore you shall spread your Wheat, not above

above a foot thick at the uppermost, and so let it lie: observing once in four or in five days at the most, with a large wooden shovell, to turn the *Wheat* quite over and over. And thus doing, you shall be sure to keep it as sweet, sound and good, as when it first came into the Barn: for neither can the heat, sweat nor coldnesse offend it, the first being cooled and tempered by the opening and dispiercing; the second dried up by the ayre which hath free recourse into it, and the last comforted by the labour and tossing of the shovell, casting it up and down from one place to another; and though some curious husbands may object that this manner of keeping corn, drieth it somewhat too much, and thereby disableth it for some particular purposes, as for *seed* and such like; yet in that they are much mistaken; for this stirring and moving of Grain, is not a drying of it, but rather a great comforter and strengthner of it, dispersing back into the corn, those wholesome vapours which should do it good (by way of communication and fellowship with the Grain) and expelling those ill humours which sweating out of it would otherwise confound and hurt it, so that in conclusion for the true and long keeping of *Wheat* sweet, sound, and perfit, without losse or corruption, there is no way more safe or easie, then this last expressed, being of all other the best, although in shew it appear sleight and triviall, as for the most part things of greatest moment in this nature do; but to the judicious Husbandman I referre it, whose aym is at the worth and substance, not at the words and curious glosse, set forth in strange ingredients.

To preserve
Rye.

Touching the keeping of *Rye* or *Masline*, or as some call it *munck-corn*, or *blend-corn*, being part *Rye*, and part

part Wheat mixed together, that which preserveth Wheat will also preserve it, for they are Grain of like nature, onely the Rye is somewhat hotter and dryer, and therefore will endure somewhat more moisture; yet to speak particularly touching the preservation of Rye, there is nothing better then the Plaister floore, and oft turning; the close Hutch is also exceeding good, so is the Pipe or Dryfat, but being once opened, and the ayr entering into the Corn, except it be soon spent, it will soon putrifie, for though in the close keeping, it last long, yet when it comes to the ayr it will quickly receive taint. Lastly, for the profit in keeping of Rye, indeed there is nothing better then to ply it and tread it hard into hard vessels or barrels, wherein salt hath been much lodged, or other brine or salt matter: provided alwayes that the vessels be sweet and untainted, no ways subject to faughtinesse, or other unfavourie smells, from which there is no preservation.

Concerning the preservation and keeping of Beanes, To preserve Beanes, which are indeed a more grosse and fatter Graine then any heretofore written of, and out of the fulnesse of their substance, more subject to moisture and those dankish humors which corrupt corn: the carefull husbandman observeth two rules; first, not to thrash any Beanes or Pulse, more then for necessary use (as for the Stable or Mill) before it be midde *March*, at which time the Graine having taken a kindly sweat in the Mow, Stack, or Hovell, is become so dry, firme, and solid, that no floore, wall, or other place of Leare can make it relent or give againe (except great abuse and too moist keeping) for it is to be understood, that this sort of Pulse or Grain, is of it self so exceeding moist and apt to sweat in the Mow, that all Husband-
men

men endeavour by no means to house it, or lay it within doores, but seek to make it up in stickes and hovels without doores, not so much that house room is wanting, as that the benefit of the Sunne, and Aye, which pierceth through the same, dryeth and ripeneth the corne in such kindly manner, as maketh it as serviceable as any other: and indeed, the first invention of stacks, hovels, reekes, and such like, did not spring so much from the want of housing, as from the good and profit which the Husbandman found to accrue to this kind of Graine only by reason of laying it abroad, for it is certaine, that Beanes and Pease neither grow together, nor ripen together, but put forth their increase one after another; for you shall see upon one stalke, bloomes, twads, and ripe cods: so likewise in the gathering of Pulse (when it is reaped from the ground) you shall see some dry and withered, some ripe, some halfe ripe, some absolutely greene, and as but new in growing.

Now all these must be reapt together, and if you stay them in the field till all be of like driness, questionlesse the oldest will shake and shed upon the ground before the youngest be ripened, and what that losse will redound to, every Husbandman can judge: so also to house and mow up in close mow, the dry pulse with the green, surely the green cannot chuse but inflame, and heate the dry, and the dry so heated to give fire to the green, till both be either rotted or consumed: and hence it came, that expert Husbandmen devised to lay their pulse for the most part, ever without doors, in stacks, reekes, and hovels, that the Sun and wind passing thorough them, might bring all the graine to an equall drynesse and hardnesse.

Again,

Again, Pulse being of all grain the coursest and fullest of substance in it self, and the straw ever big and substantiall, and full of broad thick leaves, ever moist and sappy, it must needs follow that this grain must ever be most apt to sweat in the mow, & so necessarily craveth the greatest store of aire, and the longest time in drying, so that to return to my first purpose, it must needs follow, that no beanes or pease can be ripe or seasoned in the mow, till it be mid *March* at least; for it is an old saying, among the best husbands, *That a march wind is salt which seasoneth all Pulse*: and if use or necessity compel men to thrash their pulse before that time the grain is so imperfect, that it must be kiln-dried, or else it is fit neither for the use of bread nor provender.

Now herein is to be understood, that pease or beans which are kiln-dried, may be kept sound, sweet, and good, either on plaster floores, boarded floores, or earthy floors, the space of many years, without turning, or tossing; nor neede you to respect how thicke the heap lye, since beans after they are once dried on the kiln, or in the Sunne, never after will thaw, give again, or relent, but remaine in their first soundnesse: But if you preserve your Beanes for other uses, as to boyl in your pot, and feed your servants withall, as is used in *Somerset-shire*, and many other Westerly parts of this Kingdom, then it shall be good for you to take oyle barrells, oyle cask, that is sweet, and first Calke them all over within and without with ashes, and then put your beanes therein, and close up the heads, and as it is affirmed by divers great Authors of Husbandry, it will keep Beanes sound, sweet and good, twenty yeares: nay, some give instances of Beanes which have beene thus kept and preserved the space of
one

one hundred and twenty yeares; and surely I am perswaded that if Beanes be well and dry got, and threshed at a seasonable time of the year, as in March or April, that thus kept, they will list the uttermost of a mans pleasure.

Preserving of
pease or fet-
ches.

Now for the keeping or preserving of Pease or Fetches, which of all other Grain whatsoever, is most subject to rottenesse and imperfection, because out of its own nature is apt to breed wormes, weavils, and mytes, by reason of the much luscious and sweetnesse of the kernell of the Graine; you shall in all things observe the same courses that you do with your Beanes, both touching your gathering, drying, stacking, and also thrashing, for as they are most adrest to go together being neer of nature and condition one to the other, so it is fit that you do apply unto them one and the self medicine or remedy.

And herein is to be noted, that as Pease, are of more generall use then beanes as for horse provender, feeding of Swine Pigeons, Pullen and such like; as also for bread, pottage, to boyle, with, or without meat, for certainly it is a most wholesome and strong food, as may be seen by the people of *Devonshire, Cornwall, and Somersetshire*, to whose great strength of body nor any reason can be given more probably then their much feeding on this Grain, and their acquaintance with much and strong labour, so they ought with more care and circumspection to be preserved from all those annoyances that naturally are apt to hurt them, as wormes, rottenesse, mould, mustinesse, and such like.

And first, there is nothing better for the long and well keeping of Pease, and the very well drying of them,

them, either in the Sun, or on the Kiln, especially those which you use for bread, provender, or feeding of Swine : and although some husbands use to feed swine with undried Pease, nay many times both undried and undrest, that is to say, the Pulse or Chasse not taken away, and are of opinion that the Grain so given, sooner feedeth and puffeth up Swine then the other, yet they are deceived ; for albeit it swell and puff up a beast, yet is the flesh and fat neither so good, sound, and long lasting, as that which is gotten with dry food, nor doth it make a Swine so thirsty, and the Husbandman is ever assured, that when his Swine drinkes not well, hee feeds not well : therefore what Pease you keep for bread, or feeding of Cattell, by all means dry them well, and lay them either in Garners or Floores, and they will last sound and good without breeding worms or wevels, as long time as you please. But those which you keep for food at your own table, as in pottage, or other uses, which must by no meanes be too much dried, because then they ask a double time in boyling, and spend a double quantity of fewell in their preparing.

Some use after they be clean thrasht and drest, to lay them in a cool close Garner either of Plaster, Earth, or Boords, of which Plaster is the best ; as for any thing that relenteth or yeeldeth moysture, as lyme, stonewals, or such like, it is most hurtfull, and immediatly maketh pease mould and rot : also it is good to lay your pease in thick heapes in your Garner, for that will preserve them moyst the longer time, but to spread them thin upon the floor, by which means the Sun, Ayr, and wind may passe thorow them, is not so good, for it dryeth them too sore, and taketh from them much of their sweetnesse and goodnesse, which ought most carefully

to be preserved. There be other swch preserve these tender meat Pease by thrashing them up, and then letting them lie in their own pulle or chaffe, and not dressing them, but as they have occasion to use them, and questionlesse this is a very good and laudable way, for the pulle and chaffe, doth maintain them sweet and moist, and yet keepeth them withall so warm and comfortable, that they last much longer, then any other way whatsoever, and in this manner of preserving pease is to be noted, that by all meanes you must let them lye upon a dry earth floore, so long as they are in the chaffe, rather then on the boord, or on plaister, and yet in this case the boords are better then plaister.

~ Lastly, and which indeed, is the best experiment of all other if you intend to keep pease any extraordinary long time, you shall take Barrells or dry Cask, wel and strongly bound, and pitch them within exceeding well, with the best pitch or bitumen that you can get, and then sprinkle the pitch all over with strong vinegar, then take your pease, being clean and well drest, and put them into the barrells, pressing them down close and hard, then head up the barrels, and let them stand dry and cool, and they will preserve your pease sound, sweet, and good for any use whatsoever as long as you please, be it for ten, twenty, or thirty years, according to the opinions of ancient Husbandmen, and other provant Masters; that have lived and commanded in towns besieged, and towns of garrison; neither shall any worm, mite, or wevell, ever breed in it, or offend it, nay if any have in former time been bred in them, this manner of keeping the grain, killeth them, and destroyeth them for ever.

Now

Now there is another sort of Pulse which are called *Lentils* or *Lupins*, which albeit they are not so generally used for the food and sustenance of man, yet they are for horse, swine, and other cattell as much in request as any Graine whatsoever, and indeed doe feed fatter, and sooner then other ordinary Pulse, and the flesh so fed is sweeter and pleasanter both to the eye and to the taste, then that which is fed with Beanes or pease; also they are a pulse very phisicall and good for many medicines, as may appeare by the workes of many learned Phisitions; and these the longer they are kept, the better they are, and fuller of profit. To preserve them then in good and sound estate, it is meete to reape them in very faire weather, and to Stacke them up exceeding dry, and if they be laid in the barne, or any close house, it is not amisse, for they will endure housing better then any other pulse, yet the sooner you beat them out of the straw, or thrash them up, the better it is, for Husbandmen suppose there is no greater hurt to this hand of Graine, then the long keeping it in the straw; for it is of such ranknesse, that the very straw, and cods breed in it much putrification; and I my self observed both in Spaine, and in the Neighbour Islands, where is great abundance of this kind of Graine, that they doe no sooner gather it and bring it home, but immediately they thrash it; nay, some thrash it in the fields upon the lands where it growes, and so bring it home, then spread it on fair boorded floores in very great heapes, or else lay it up in close hutches, or bings, such as Wheat and other white grain is to be kept in. If you dry this kind of pulse in the Sun, or upon a kiln, with a very moderate & soft fire, & then lay it

Preserving of
lentils or lupins.

up either in close Garner, or close Hutch, it will last many yeers sound, good, and without corruption; there be other Husband-men which mixe with this Graine when it is thrasht, a half part of hot, dry, white sand, or at least cover the whole heape of Pulse with the sand, and doe finde that it keepe the Grain very sound and good many years together. But to conclude, if you take strong vinegar, and a good quantity of *Lacerpitium*, and dissolve and mix them very well together, and then having laid your lentils or lupins together on a fair boarded floor, in large, broad, and flat heapes, about two foot, or two foot and a half thick, with the *Vinegar* and *Lacerpitium* sprinkle over all the heape, and not any change of weather, frosts, wormes, or other vermine shall do them hurt, but they shall remain sound and good as many years as you please to keep them. There are other Husband-men that in stead of this before rehearsed, take only sweet oyl, and sprinkle it all over the Grain, and find the same vertue and effect, for neither wormes nor other vermine will touch it, nor will the radicall humour thereof at any time waste or decay, but remain strong, full and sound, without any kind of diminishing, nor shall you find any abatement of it, or shrinking in the measure, but that which was a bushell this year will be also a bushell the next yeare, and as many yeares after as you please, which is no small profit to the owner.

Whereas on the contrary part, if the Grain be either dried in the Sun, on the Kilm, or by the wind, you shall hardly have of every such bushell so dried, three pecks and a half againe, which is by computation at every quarter, which is eight bushels, full one bushell lost, and yet this Pulse thus preserved, as before said, shall be

be as good for any use whatsoever fit for such Corn to be employed in, as any other dried Grain whatsoever, and yeeld as much every way, and altogether as good meale, and as good meat.

Now touching the preserving and keeping of Oates, ^{preserving of oates.} it is to be understood that of all Grain it is least casual, because of it self naturally it breedeth no evill vermin, and is again preserved and defended with a double husk whereby neither cold, moysture, heat, nor drynesse, is able so soone to pierce and hurt it as other Graines, which are more thin clad and tender; yet because it is of great and necessary use both for cattell and pullen, and that neither the Husband nor Housewife can well keep house without it, you shall know, that the best way to preserve it longest, is, after it is thrasht to dry it well, either in the Sun or on the Kiln, and then either put it into close Garner or close Cask, and it will keep many years sound and sweet.

Touching the preserving of Oat-meal, which is the ^{preserving of oatmeal.} the inner Kirnell of the Oates, and a Graine of most speciall use in the Husband-mans house, as in his porrage, in his puddings, and in many other meats necessarily used for the labouring man; It is an experiment not altogether so curious as any of the rest formerly written of, for no Oat-meal can be made, but the Oats must be exceedingly well Kiln dried, or else the Kirnell will not part from the Hull, and being dried, as is fit, that drying is sufficient to keep and preserve the Oat-meal divers years.

Provided ever, that presently after the making of your Oatmeal, you put it into dry close Caske, or dry close Garner (but Caske is the better) and so as it may re-

remain exceeding dry (for any thaw or moyſture corrupts it) and as neere as you can let it have (if it be poſſible) ſome ayre of the fire, for the warmer it ſtands, the better and longer it will laſt, as experience ſheweth.

preserving of
any meal.

For the preſerving or long keeping of any ſort of Meale, there is no better way then firſt to boulte and ſearſe him from his bran, for the bran is very apt to corrode and putrifie the Meale, and to bring it to a faughtineſſe or muſtineſſe, then into every ſweet and cleane dry Caſke cloſe and well bound, tread in your Meale ſo hard as you can poſſible tread it, and then head it up cloſe, and ſo you may keep it either by land or water ſo long as you pleaſe, and when you have any occaſion to ſpend of it, be ſure to looſen no more of the meale then you preſently uſe, for the faſter and cloſer the meale lyeth together, the longer and ſweeter it will laſt, for it is the gathering in of the ayr that only corrupts it.

And here is alſo to be noted, that you ſhould not preſently as ſoone as your Meal is ground, boulte from the Bran, but rather let it lie a week or fortnight in the Bran, in ſome cloſe Bing or Trough, and then after that time boulte or ſearſe it, and you ſhall finde it to afford you in every buſhell, more meal by at leaſt half a peck then if you ſhould preſently as ſoon as it comes from the Mill; whence it proceeds, that the cunning and ſkilfull Baker will ever have a week or fortnights proviſion of meale before hand, which lying ſo long in the Branne, payes double intereſt for the continuance.

Now if it fall out ſo, that either by trade of Merchandiſe, or other occaſions, you buy any meal by way of

of transportation which is caskt up (as much meale is sold by the Barrel) you shall then presently as soon as you have bought it (if it be for your own use for expence) break open the heads, and empty the meal upon fair sheets on a clean floor, and then spreading it abroad let the Sun and Ayr passe thorow it, which will dry up the sweat, and if there be any taint of faughtinesse, take it away, and bring the meale to his first sweetnes, and then immediatly boulte out the course Bran, and after, as was before declared, tread it hard into fresh and sweet cask: and thus you may keep your provision of meal all the yeer long; nay, if need require two or three yeers, for after the first sweat is taken away and kindly dried, there is no doubt to be made of any that shall follow after.

Lastly, touching the preserving and keeping of all manner of small seeds of what nature or quality soever they be, whether Hempe, Line, Rape, Mustard Seed, or any other Garden Seed whatsoever, though truly and properly they last never above one yeere, nor are fit for Seed or Increase after that date expired; yet in as much as they are medicinable after, and a much longer time, therefore you shall understand that the best way to keep them safe and sound, and the fittest for use and profit, is first to gather them as soon as you perceive them to be ripe, and the weather being bright, clear and dry, then you shall dry or wither them in the shade, and not in the Sunne, especially upon a plasterd floor, where the light looketh to the South, and be sure that as little Sun and moysture come to them as you can, for both are main enemies; which done, bind them up in bundles without thrashing, and so hang them up, and keepe them in their owne cods, and

preserving of
all smal seeds

they will last for all uses, a full year, and for some particular uses two or three years; and in this manner you may also preserve all manner of hearbs, weeds, flowers, rootes, and the barks or rindes of all manner of trees.

CHAP. 19.

How to keep Grain, either for transportation by Sea, or for use in a Town of War or Garrison, from one year to one hundred and twenty.

The use of
grain & pulc
at Sea.



Of speake of the Graines and Pulses which are meetest for the Sea, and their severall uses.

Of Rice and
the use.

It is to be understood, that the best and principallest Grain which is indeed both most sweet, most fresh, most pleasant in taste, and most long lasting, is Rice, which although it grow not much in our Kingdom, but that we are beholden to our good Neighbours for the trade thereof, yet it is in such plenty where we fetch it, that we need neither complaine of the scarcity nor the cost, and so much the rather in that a pecke thereof will goe further then a bushell of any other Grain: Of this Rice is made many good and wholesome dishes, some thick, some thinne, some baked, some boyled, as thus: If you take a quarter of a pound of Rice, and boyle it in a pottle of Water, till it come unto an indifferent thickness, and then put into it a good lump of potted or barrellled butter, and as much sugar as shall salt-wise season it to an indifferent sweetness, it is a dish of meat, meet for an Emperour at Sea, wholesome, good, and light of digestion, and will be as much as foure reasonable men can well eate at a [meal,

meal; for the nature of the Rice is such that it wil swell in boyling, and grow to that bignesse, that in an instans it will thicken a pottle; some use the night before they boyl it, to steep it in so much water, as will onely cover the Rice all over, and then the next day boyl it in a pottle of water more, and the Rice so steeped will so swell, that all the first water will be drunk up, and a great deal of lesse boyling will serve to make it ready, and sure then this a man cannot find a cheaper way to feed men, since one pint of water, and the fourth part of a quarter of a pound of Rice (which comes not to above a half penny at the deereſt reckoning) is a meale sufficient for a mans eating, having Bisket and Drink proportionably. And this Dish of meat being thus thin boyled, is called at Sea Lob-lolly, and after salt feeding is wondrous wholesome and comfortable to any man, whether he be sick, sound or diseased, and both abateth infirmities, and hastneth the healing of all wounds.

There be others, that after they have steeped this Rice (as aforeſaid) dothen boyl it in like manner, till it be so thick that a spoon may stand upright in it, and no liquidnesse of the water perceived; then put a good lump of butter into it, and boyl it with it, and stirre it about, and it will make it come most clean out of the porin which it is boyled; then season it with Sugar, and a little Cynamon, and it will be a dish of meat right good and delicate, and meet for any man of what quality soever, that is worth goodnesse or preserving, nor need the quantity exceed the proportion already prescribed.

Again, if you have meal in the ship, if you take of this Rice steeped in water, and a little lightly boyled and seasoned with Sugar, Cynamon, and Ginger, and a good

good quantity of Butter, and then bake it in little pasties, you shall find it a most delicate, pleasant, and wholesome meate, and that a penny in it shall go further and give better contentment then four peniworth of Beeffe, Bacon, Fish, or any other hard salt Meat; yet I doe not wish any man of ship-board to make this a continuall feeding dish, for it is both too pleasant and too strong, and where evacuation of some humours are wanting, may breed inconvenience in strong Bodies; but rather to use it once a week as a physicall nourisher, or for the comfort of sicke and diseased men, whose stomackes are tane away, or else weakened; there may be also made of this Rice in time of necessity (being ground to a fine meale) an excellent good Bread or Ruske, which is pleasanter, sweeter, and much longer lasting then any made Wheat, or any other Grain whatsoever, besides many other Seedes which would in this place shew but too much curiosity to repeat.

Wheat, and
the use,

The next Grain unto Rice which is of estimation and great service at the Sea, is Wheate, of which although there be divers kindes, yet they are all alike for the serving of this purpose; onely the large and thick huld Wheat (being well dried) will last the longest, but the smaller and fine skind wheat yeelds [the purer flower, and makes the better meate. Now of this Wheat is to be made divers dishes of meate, for some do take it, and bruise or beat it in a Bag, till the upper skin be beaten off, and then having drest and winnowed it, boyle it in cleane Water till it burst, and grow as thick as pap; then take it from the fire, and being hot, put into several dishes of wood, or traies, so much in every dish or tray as may serve four men, and so let it cool,

cool, then give it to the sick or sound, as you shall be directed, and it is an excellent wholesome good meate, either cold or else hot, and a little butter melted with it, or being again boild in fresh water, and seasoned with Salt and a little Sugar, it makes an excellent Grewel, or lob-lolly, which is very soveraign at sea, also your parched Wheat is a very good food at Sea, and of much request and estimation, being sprinkled with a little salt, and of this food a little will serve a man at a time, by reason that the much sweetnesse thereof soon filleth and cloyeth the stomack, yet it is wondrous light of digestion, and breeds great strength, and much good bloud, as we daily find by experience.

The next Grain unto this which is to be recommended to the Sea (and which is indeed not any thing inferior to either of the other going before, both for strength and lasting) is Oatmeale, which by reason of the great daynesse, and drying thereof, fees little or no imperfection at the Sea, as being unapt to sucke or draw in any of the ill or moyst vapors thereof. Of this Oatmeale is made many good, fresh, and comfortable meates at Sea, as Grewell, or Lob-lolly, by boyling it in fresh water, and seasoning it with Salt, and (if you have it continually) sometimes with Sugar and a few Currants, and a little Mace, which is meate of great strength and goodnesse, especially for such as are sick and weak; for it is a great restorer of nature, and a purger of the bloud; also to steep the whole Grots of Oat-meale a night in water, and then drayning them, and putting it into a Bag, boyle it till the Grots break; then putting it out of the bag, butter it with butter, and it is an excellent food; also boyling Oatemeal in fresh Water with Barne, or Dregges, and hinder ends of
your

Of Oatmeale
and the use.

your *Beer-barrels*, makes an excellent good *pottage*, and is of great use in all the parts of the West country, especially, where *Marriners* or *Sea-men* live, and are called by the name of *Drousson pottage*. Also, of *Oate-meale* is made that meate which is called in the West, *Washbren*, and may be made at the Sea at your pleasure, being a meat of that great account amongst *Devonshire* and *Cornish* men that they will allow it no paralell; and for mine own part I have heard a most famous and and well learned *Physitian* in those parts allow it to be a meat of singular great strength and goodnesse, and withal so light of digestion, that a man can very hardly surfeit upon it at any time; and I am the rather induced to believe the same, because I have observed and seen many of the labouring men of that Country to eat such an unmeasurable quantity thereof, that in mine eye one mans Supper would have served a whole Family.

But you will say, *Hunger* and *Labour* are such excellent Sawces, that they digest any thing.

To that I answer, that I have seen Gentlemen and Gentlewomen of that Country, of whom as much curiosity hath attended, as is liable to the City, nay such as have had sicknesse their best familiar, yet eate of this with great and sharpe appetite, and when health was most to be feared, then to boast of most soundnesse. This *Washbren* is to looke upon like *Painters Cize*, or new made *Jelly*, being nothing but the very heart of the *Oate-meale*, boyled and drayned to that height and thicknesse, having neither Hull nor Bran in it, but the pure Meale and Water, and it is to be eaten either with wine, strong bear, or ale, or with clarified honey, according to mens stomackes or abilities.

Now

Now this the eaters thereof affirme, that by no meane s it must be chewed, but rather swallowed by the spoonfull whole, because chawing like a pill makes it taste unpleasantly. There is again another meat to be made of Oat-meal, which is called Girt-brew, and is somewhat more course, and lesse pleasant then Wash-brew, having both the branne and huls in it, yet is accounted a food of a very good strength, and exceeding wholesome for mans body, and of my knowledge much used and much desired of all labouring persons that are acquainted with it: Many other foods there are to be made of Oat-meal, but these shall be at this time fully sufficient.

The next Graine to this I account Barley, which may be every way used like unto wheat, either to make grewell, to be creyed, parcht, or boyled: and for Barley for this purpose of food, the best is *French Barley*, the next is Barley big, or Bear-Barley, and the worst are the spice or battledore Barley, and our common *English Barley*. Of Barley and the use.

And as Barley or Wheat, so may you use your Bucke, and your *Indian Silligo*, for they are of like nature, onely aske a longer time in their beating, steeping, and boyling, because they are naturally more hard and more dry, by reason of the heate of the Climate in which the best grow; and is ever to be observed for a rule, that the dryer you keepe your Corne at Sea, the better it is, the sweeter and longer lasting. Bucke, and the use.

Now having shewed the use of these lighter grains, I will come to Pulse, and shew their use and benefit at the Sea, or in besieged Towns: and of Pulse, I will first speak of Beanes as a principall food, wholesome and Of pulse, and first of beanes, the use.

and strong, and though not so fine and light of digestion as any of the former, yet exceeding hearty and sound & a great breeder of good blood; they are for the most part to be boyled whole, till such time as they appear soft and tender, or begin to break, and then drained from the water, are served in trayes, and well salted, and so eaten; a pottle whereof is thought a full proportion for four men: and of these beanes there are divers kind as the common Garden Beane, or the French bean, which is great, broad, and flat, and these are the best to boyle, either with meat, or by themselves, and ask the least labour, because their outer skinne is most tender, and the inward substance most apt to be molified and softned: they may also bee boyled both when they are young and green, and when they are old and dry, and the meat at both times is good and favory.

The French
bean.

The next beane to these are the Kidney beane, which is flatter, and lesser, and neerer the proportion of a kidney then the French bean is, and this is also a garden beane, and whilest it is young and green is to be eaten Salet wise after they are boyled, both the cod and bean together, and it is certain, a better sallet cannot be tasted; for the cod or husk is every way as excellent in taste as the bean is; but after they grow old and dry, and that the moysture is gone out of the cod, then it is meete to thrash them, and then boyl them like the French beane, and they are every way as good meat, and as soon boyled and as tender.

The Kidney
bean.

The next bean to these are your common and ordinary field beanes, which having tough and hard skinnies ask more boyling then the other beanes, and are somewhat harder in taste, yet a good sound food also: there

Common field
beans, the usc.

there be many that parch them in the fire, and think them then the best meat; because the fire sooner breaks the skin and softneth the kinnell; but they cannot be done so abundantly and therefore are not so much in use.

After this great sort of Pulse, I will now speak of the smaller sort, as pease and their like; and of pease there be two kinds, the Garden pease, and the Field pease, and for this use (albeit both are very good) yet the Garden pease are best, for they are soonest boyled and are most tender, and serve for most use, as for pottage, boyling, perching or speling; and of these garden pease, there are divers kinds; as white pease, French pease, haskings, rounsvalls, and such like; the first being the longest lasters, the second the pleasantest in taste, the third the earliest and tenderest, and the last largest and fullest.

Of pease and the use.

The Field pease are onely of two kinds, as the white pease, and the gray pease, and they seldome make pottage, because they are unapt to break, but are onely for boyling and making of leap Pease, or for parching, yet a good and a strong food: and as we use pease, so in other Countries they use lupins, lentills, tares, fetches, and such like smaller pulse, but they are neither so good, wholesome, nor favourie in taste, being a kind of grain more rank, fulsome, and breeding of ill blood and infection within, these in cases of Sea-fare and Warre-fare, ought principally to be eschewed and shunned.

Several sorts of Garden pease.

Now it resteth after this long digression of these several graines, and their uses, with the meates and profits which are made for them, that we come to the safe manner of keeping and preserving them either by land or water, for victuall or transportation, so as they

they may last and endure without ill smell or rottenness.

To transport
Grain.

And first for transportation of graine by Sea, it is two ways to be done, as either in great quantities for trade and the victualling of other nations, or in smaller quantity for victualling the men in the ship, prepared for a long and tedious voyage.

Transporting
Grain for
trade.

For the transporting of Graine for Trade in great quantities, it is to be intended the voyage is seldome long, but from neighbour to neighbour, and therefore commonly they make close deckes in the ships to receive the Grain fair and even boarded, yet if such decks be matted and lined, both under, and on each side, it is much the better, and this matting would be strong and thin; there be some which make the deckes onely of mats, and sure it is sweet, but not so strong as the board: therefore the best way of transportation, is to have strong boarded deckes well matted; and then spreading the corne of a reasonable thicknesse, to cover it with matting again, and then to lay corn on it again, and then mats again, that between every reasonable thicknesse of Grain a mat may lye, the profit whereof is, that when the Corn with his own heat, and the working of the Sea shall begin to sweat, which sweat, for want of ayre to dry it up, would turn to putrification.

Then these mats thus lying betweene, will not onely exhale and suck up the sweat, but also keepe the Corne so coole and dry; that no imperfection shall come unto it: And here is to be noted, That these mats should rather be made of dry white bents, then of flags and bulrush, for the bent is a firme, dry, crispe thing, and will not relent or sweat of it selfe, but the flag or bulrush is a spongy and soft substance which

is never empty of his owne and other moystures.

Now for transporting of graine, for Victualls for the ship, which is in much smaller quantity, because it is but for the private use of a few within the ship; the only best and safest way, is, to take Salt-fish barrels, or any Caske in which any Salt-fish hath beene piled, as Cod, Herrings, Salmon, Sprats, or any other powdred Fish; and whilest the vessels are sweet, you shall calke them both within and without plaister, daubing them all over; then into them put your Graine of what kind soever it be, and head them up close, and then stow them in such convenient dry place of the ship, as you shall think fit, and questionlesse, if beliefe may be given to the worthiest authors which have writ in this kinde, you may thus keepe your Graine sweet, sound, and in full perfection from one yeere to an hundred and twenty yeeres; but certainly daily experience shews us, that all kinde of Grain thus put up & kept, wil remaine sound & sweet, three, foure, and as some say, seven yeeres, for so far hath lately beene try'd: and what here I speake of ship-boord, the like may be done in any town of war or garrison, whether besieged, or not besieged, or in any other place, where any necessity shall compell; the proof of this manner of piling or putting up of Graine, serveth as well for Land as Sea.

Transporting
of victualls.

CHAP. 20.

The enriching of all manner of barren Grounds, and to make it fruitfull to beare Hops.

***** He Hop of all plants is the most tender, and
 * T * can endure neither too rich a ground, nor
 * * yet too poore, for being planted in the
 ***** first, it bringeth forth onely leaves and no
 * * * * * bels, and in the latter yeeldeth neither leaves nor bels.

L

Now

Abating fertility.

Now in the first sort of ground, which is fertile and rich, I have nothing to doe but onely to advise how you may alay and lessen that too much fatnesse, by mixing your hills well with Chalke, or small sharpe gravell; if it be a hassell or mix'd mould, and with good store of red sand if it be a stiffe clay, for either of these mixtures will in short space abate any fertility.

Increasing of fertility.

But if the soule be contrary to this, that is, extreme barren, then you shall seeke by these meanes following to encrease the fertility: First, when you have taken view of that barren earth, which you intend to convert to a Hop-garden, you shall first looke to the situation thereof, whether it lie high or low, whether

choice of earth.

it be subject to inundations or drownings, or that it lie safe and free from any such annoyance: If it be subject to great and deep overflowes, then it is no ground for this purpose; but if it be onely liable but to some small washings, then you may buy a few small drains and sewers cast thorow your allies, convey away the water to some lower grounds, so as it may not continue long

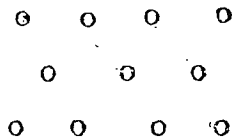
Draining water.

in the Gardens to do hurt. Besides for a further safety to the Hop, you shall make your hills a great deale bigger and higher, that when any overflow shall happen, the water may not reach above the mid part of the hill at the most, for the root may endure moystning, but not drowning, and this water thus running through the allies, and not drowning: the root will bring to the ground very much fertility. But, how soever after you have eas'd your ground of these particular faults, yet the generall fault which is barrennesse, will remaine still: therefore, having plotted out your Garden, and fenced

ced

ced it sufficiently about, you shall then cast up your hills about *Michaelmas*, placing them in a very orderly manner, and making allies between them of foure or five foot bredth betweene hill and hill, so as a man may walke at pleasure through and about them, neither shall these hills stand all directly behind another, for so one will over shade another, which is an annoyance, but according to this Figure, where there is a largenesse of space, and a by-passage, through which the Sunne may come to give comfort to every Plant.

Casting of hills and allies.



These hills, if the ground be free from water, may be raised about two foot, or a foot and a halfe high, and of a compasse answerable to the height; neither so little, that the hill may be sharpe like a Sugar loafe, nor yet so bigge, that the hill may lie flat, and so retaine and hold any raine or wet, which shall fall upon it; but you shall keepe a due middle proportion, making the hill convenient for your Plants and Poales, and so as it may shoote or put off any wet, or other annoyance, which shall fall upon it.

Now these hills you shall not make entirely, all of the one mould, but you shall take, as it were, a third part or better thereof, then another part of the earth which lieth under dung-hills, and the last part of the Sope-ashes, and these three bodies you shall mixe equally together, and of them compound your Hop-hills. But if this seeme somewhat too difficult, and that you cannot find enough for your purpose of either of these measures; then you may take three parts of the naturall earth, and but onely a fourth part of the other two, and thereof mixe your Hop-hills,

The composition of the enriching of hills

and it will be sufficient to afford you profit enough; provided you be able once in three or foure yeeres to renew it, for so long this will last in full strength and power.

Preparing
the allies.

When you have thus made up your hills, you shall then pare up with a paring shovel, all the greene swarth quite thorow all your allies at least foure fingers thicke, and with the swarth so pared up, you shall cover all your hills almost to the top, turning the greene swarth next unto the earth, so as it may rot, for that is an excellent measure also. Then when your allies are all thus cleansed of their swarth, you shall take good store of Braken or Ferne, and straw it al over quite thorow al the allies, that it may lie in a good thicknes, almost to the midst of the hills, which having al the winter to rot in, wil not onely be an exceeding comfort to the hills, and preserve both them and their Plants from many evils, but also being shovelled up together with the earth in the Spring time, wil be a marvellous strong measure wherewith to replenish the hills, and to make them to prosper exceedingly, and to save much other cost and charges, as well in measure as in carriage.

The planting
of hops.

When your hills are thus enriched, and your allies thus prepared, you shall then open your hills in the tops, and set your plants, that is to say, in every hill four plants at the least, being well prepared, and this should be done in the moneth of *October*, and these plants must be set good and deepe in the earth, and covered all over, at the least foure fingers thick; and if with the earth which covereth these Plants, you mixe Oxe-blood and Lyme, it will not onely give great comfort & nourishment to the Plants, but also defend and save the roots from worms and other vermines;

Vermine, which otherwise would seek to destroy them.

After your Garden is thus planted all over, you shall ^{poling of Hops.} then let it rest till the following Spring, and about April, finding the small Twines of your Hoppes issued out of the Hills, and running along the ground, you shall then set up your Poales, which Poales so they be long and straight may be of any wood you please, as either Ash, Elme, Withy, Willow, or Sallow, and in the setting up of these poars, you shall have two very carefull respects: *First*, that in putting in of the poales, and fastening them with the earth, you do not hurt the Hop-roots, which a small carelesnesse may do, but be sure to set them clear at the rootes: and that you may do it the better, and make your poales to stand the faster, it is good that you have an iron auger wherewith first to pierce the ground, and then to put the poale in after, and so ram it in hard that it may not stirre: the second care is, that you place not one poal to over-shadow another, but that they may stand so cleere, one from another, that which way soever the Sun shall cast his beams, yet every plant (as it winds about the poale) may be an equall partaker of the same.

This, with a small observation, in the setting up of the poales, may easily be performed: the number of poales that you shall set on every hill, must be answerable to the Syens which shall issue from the roots, allowing to every poal two Syens at the least, and not above three at the most: these Syens (when your hills are poled) you shall with your hands twine about their severall poals, and those which are but new peeping from the ground you shall so fold among the other Branches, as they may of themselves run about the poal; and as these, so also all

the other twigs, which are any way derived from the main Sica, leaving not any at all to run upon the ground for that it altogether profitlesse, and to no use.

Of weeding
Hops.

For the weeding of this barren earth thus made into an Hop-garden, there is little care to be had: for first the sope ashes wherewith the hils are measured, the oxen bloud and the lime, are such enemies to all manner of weeds, that they will not suffer any to grow where they abide: Next the Braken and Fern which covereth the alleys is such a poysoner and smotherer of any thing that shall grow underneath it, that it will not suffer any weed to peep or spring up through it; yet if in any especial place where neither of these defences come, it happen that any weeds do grow, then you shall with your best care cut them away, or pull them up, and so your Garden shall remain comely, pleasant, and fruitful to every prospect.

CHAP. 21.

A generall computation of men, and cattels labours: what each may do without hurt daily.

plowing and
sowing.



To speak generally of all husbandly works where the Countrey is tollerable without any extraordinary difficulty, you shall understand, that a man may well in stiffe ground, plow an Acre, or an Acre and an half, and in light sand grounds two or three Acres with one Team in a day, and he may plow and sow in stiffe ground two Acres and an half each day, and in light ground foure at least with one Teame, and alwayes what he soweth, that he may harrow the same day also.

A man

A man may well mow of good and deep loggy meadow, or of rough, uneven meadow, every day one acre; mowing clean and making a smooth board; of wel standing and good smooth meadow an acre, and a half each day: and of very thin and short grasse, or upland meadow two acres at the least every day.

Also, he may mow of corn, as Barley and oats, if it be thick, loggy, and beaten down to the earth, making fair work, and not cutting off the heads of the ears, and leaving the straw still growing, one acre and a half in a day: but if it be good, thick, and fair standing corn, then he may two acres, or two acres and a half in a day, but if the corn be short and thin, then he may mow three, and sometimes four acres in a day, and not be over-laboured: Also of beans he may mow as much, and of Pease mixt with beans, having a hook to follow him no lesse; for they are works in this nature most easie, and least troublesome.

Mowing.

One man with a binder may well reape an acre of Wheate, or Rye in a day, if it be principall good and well standing, but if laid or beaten down with weather then three rood is fully sufficient for a days labour, but if it be thinne and upright standing, then he may reape and bind five roods in a day: of small pease, Fetches, and such like, a man may well reape two acres every day.

Reaping.

Now forasmuch as it is a custom in divers countries (and truly is exceeding profitable and worthy in imitation) to sheafe and bind up both Barley and Oates, as well as Wheat or Rye, and that it both saveth much Corn, and also makes it take a great deal lesse room, and that this labour is to be done after the mowers, as the other was after the reapers, by gathering the Barley,

Binding of
Barley and
Oats.

ley of Oats up without a fickle or hook, as it lies in the swath, and so binding it in sheaves, you shall understand that one man in a day shall bind as much as one mower can mowe; and if the man be any thing skifull in the labour, two binders will bind as much as three mowers can mowe.

Gathering in
of Grain.

For the gathering or inning of Graine, no man can proportion the number of loads, or quantity of ground shall dayly be brought home, sith the journeys are uncertain, some going a quarter of a mile, some halfe a mile, and some a mile: therefore it is the Husbandmans best way, the first day to go with his Teame himself, and both to observe the labour and distance of place, and by that to compute what may be done after, without hurt to his catle, and where he fails of any hope, there to make a strict account of the error; for it is either ignorance or carelesnesse which brings forth mischances, speaking of husbandry, as overthrowing the Team, over-loading the Team, breaking necessary instruments, or not respecting the ways, and passage, any of which may in a day hinder more then half a dayes labour.

Ditching.

Again, a man may in a day, ditch, & quickset of a reasonable ditch four foot broad, and three foot deep, a rod or a pole a day, allowing sixteen feet to the rod, and so of larger measure less ground, and of less ground larger measure, according to the sufficiency of the fence which you purpose to make.

Hedging.

A man may hedge also in a day, if the hedge be good and substantiall, that is to say five foot high, welbound thick stackt, and close layd, two rod in a day, and if the work be lower or thinner then double so much, according to the former proportion.

For

For this plashing of hedges, or making a quick fence Plashing.
if he doe it workmanly, and that the growth be high
and well growne; and then he lay it thick, close, and
strongly bound on the top, turning the Quicke downe-
ward and inward, to plash a rood a day is as much as any
man can well do; but if ye plash it after the west coun-
treys fashion, that is, only cutting it down, and laying
it along close to the ground, seeking only thickness, and
not much guard or comeliness, then he may well plash
a rood and a half in a day without trouble, and sure in
this work is great care and art to be used as well for the
preservation of the quick, as the goodness of the fence,
being a thing of worth and validity to every Husband-
man.

Again, a man may delve or dig, as for Garden-mould, Delving.
Hemp-yard, Flax-yard, or for the setting of Corn, or
levelling of uneven places, one rood in a day, and the
ground so digged and delved, he may rake, dresse, and
levell in the same day also; but if he dig it deep, and
trench it, and measure it, as is meet, either for Garden,
Orchard, or Corn setting, then to delve half a rood in
a day, is a very great proportion, because ordinarily to
delve, as to receive ordinary Seeds, requires but one
spade graft in depth, but extraordinarily to delve, as for
enriching and bettering of the ground, and to cleanse it
from stones, weeds, and other annoyances, will require
two spade graft at the least.

Lastly, a man may thrash if the corn be good and
clean, without some extraordinary abuse or poverty in Thrashing.
the Grain, in one day four Bushels of Wheat or Rye,
sixe bushels of Barly or Oats, and five bushels of Beans
or Pease, but the Pulse must then be imagined to be
exceeding good, otherwise a man shall thrash lesse
of

of it, then of any other kind of Graine, for as when it is wel loaden, it yeeldeth plentifully, so when it is poor and lightly loaden, it yeeldeth little or nothing, and yet hath not one stroke lesse of the flail, nor any labor saved more then belongs to the best Pulse whatsoever, being ever at least three times turned, and four times beaten over.

The particular
expende of a
day.

Having thus generally run over (in a short computation) the labors of the husbandman, I will now briefly as I can, go over the particular dayes labours of a Farmer or Plowman, shewing the particular expence of every hour in the day, from his first rising, till his going to bed, as thus for example; we will suppose it to be after *Christmas*, & about plow-day (which is the first letting out of the plow) and at what time men either begin to fallow, or to break up Pease-earth, which is to lye to bait, according to the custome of the Countrey; at this time the Plowman shall rise before four of the clock in the morning, and after thanks given to God for his rest, and the successe of his labours, he shall go into his stable; or beast-house, & first he shall fodder his cattle, then cleanse the house, and make the booths cleane; rub down the catle, and cleanse their skins from all filth, then he shall curry his horses, rub them with cloaths, and wisps, and make both them and the stable as cleane as may be, then he shall water both his oxen and horses, and housing them again, give them more fodder and to his horse by all meanes provender, as chaffe and dry pease or beans, or Oat-hulls, pease or beans or cleane oats, or cleane Garbidge (which is the hinder ends of any Grain but Rye) with the straw chopt small amongst it according as the ability of the Husbandman is.

And

And whilest they are eating their meat, he shall make ready his Collars, Hammes, Treates, Halters, Millens, and Plowgears, seeing every thing fit, and in his due place, and to these labours I will also allow full two houres; that is, from four of the clock till fixe; then shall hee come into breakfast, and to that I allow him halfe an houre, and then another halfe hour to the gearing and yoking of his Cattle, so that at seven of the clocke he may set forward to his labour: and then he shall plow from seven of the clock in the morning, till betwixt two and three in the afternoone; then he shall unyoke and bring home his cattle, and having rub'd them, drest them, and cleansed away all dirt and filth, he shall fodder them and give them meat; then shall the servants go into their Dinner, which allowed half an houre, it will then be towards four of the clock, at what time he shall go to his cattle again, and rubbing them downe, and cleansing their stalls, give them more fodder; which done, he shall go into the Barns, and provide and make ready fodder of all kinds for the next day, whether it be hay, straw, or blend fodder, according to the ability of the Husbandman.

This being done and carryed into the stable, ox-house, or other convenient place, he shall then go water his cattle, and give them more meat, & to his horse provender, as before shewed: and by this time it wil draw past six of the clock, at what time he shall come in to supper, & after supper he shall either by the fire side, mend shoos both for himself and their Family, or beate and knock Hemp or flaxe, or pick and stampe Apples or Crabs, for cider or verduice, or else grind malt on the querns, pick candle rushes, or do some husbandly office within doores till it be full eight a clock: Then shall hee
take

take his Lanthorn and Candle, and go to his Cattel, and having cleansed the stalls and planks, litter them down, look that they be safely tyed, and then fodder, and give them meat for all night; then giving God thanks for benefits received that day, let him and the whole household go to their rest til the next morning.

Now it is to be intended, that there may be in the Household more servants then one; and so you will demand of me what the rest of the Servants shall be employed in before and after the time of plowing : To this I answer, that they may either goe into the Barne and thrash, fill or empty the malt-fat, load and unload the Kilne, or any other good and necessary work that is about the yard, and after they come from plowing, some may goe into the Barn and thrash, some hedge, ditch, stop gaps in broken Fences, dig in the Orchard or Garden, or any other Out-work which is needfull to be done, and which about the Husbandman is never wanting, especially one must have a care every night to looke to the mending or sharpening of the Plow-irons, and the repairing of the Plow and Plow gears, if any be out of order, for to defer them till the morrow, were the losse of a dayes work, and an ill point of Husbandry.


Particular labors of cattel. Now for the particular labours of Cattell, though it be already inclusively spoken of in that which is gone before, where I shew you how much a man may conveniently plow in a day with one Team or Draught of cattel, yet for further satisfaction, you shall understand that in your Cattell there are many things to be observed, as the kind, the number, and the soyl they labour in, for the kind which are Oxen, Buls, or Horses, the best for the draught, are Oxen, and the reasons I have shew-

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the reasons I have shewed in my former Works, the next are Horses, and the worst Bulls, because they are most troublesome; the number fit for the Plough, is eight, sixe, or four; for the Cart, five or foure; and for the Waine, never under six, except in leading home of harvest, where loading easily, four very good oxen are sufficient; for the soile, if it be of the toughest and deepest earth, eight beasts can do no more but fallow or breake up Pease-earth, no, nor fewer stirre, if the season grow hard and dry; for soyling, winter rigging and seed furrow, six beasts may dispatch that labour: if the soile be mix'd and hassel, then six may fallow and sow Pease, and four doe every other ordure: but if it be light and easy sand, then fower is enow in every season. For the quantity of their work, an Ox-plough may not doe so much as a Horse-plough, because they are not so swift, nor may be driven out of their pace, being more apt to surter then horses be, so that for an Ox-plough to do an Acre, & a horse-plough an Acre and a rood, or an Acre and an halfe in good grounds, is works fully sufficient.

CHAP. 22.

The applying of husbandry to the severall Countries of this kingdome, wherein is shewed the office and duty of the Carter or Plow-man.

 T is to be understood, that Husbandry doth vary according to the nature and climats of Countries; not one rule observed in all places, but according as the earth, the aire, the much or little heat, moisture or cold doth increase or diminish, so must the skilful Husbandman alter his seasons,

sons labours and instruments; for in stiffe Clayes, as are all the fruitfull Vales of this Kingdome (of which I have named most part in a Chapter before) as also *Huntington-shire, Bedford-shire, Cambridge-shire,* & many other of like nature, all manner of arable workes must be begun betimes in the yeere, and the Ploughes and Instruments must be of large size and strong timber, and the labour great and painfull: so also in mixt soiles that are good and fruitfull, as *Northampton-shire, Hartford-shire,* most part of *Kent, Essex, Bark-shire,* and Counties of like nature, all arable toiles would begin at latter seasons, and the Ploughes and Instruments would be of middle size, and indifferent timbers, and the labour somewhat lesse then the other: but the light sandy grounds which have also a certaine naturall fruitfulness in them: as in *Norfolke, Suffolke,* most part of *Lincoln-shire, Hamp-shire, Surry,* and Countries of that nature, all arable toiles would begin at the latest seasons, and the Ploughs and instruments would be of the smallest and lightest size and of the least timber, and the labour of all other is easiest.

Lastly, for the barren unfruitfull earths (of which onely I have written in this Booke as is *Devon-shire, Cornwall,* many parts of *Wales, Darbi-shire, Lanca-shire, Cheshire, York-shire,* and many other like, or worse than they; the arable toiles would have a first season of the yeare, according to the temperance of the yeere, which if it happen early, then you must begin your labours at later seasons, and for your Plough and Instruments, they must not keep any certaine proportion, but be framed ever according to the ground, the stronger and stiffer ground having ever the strong and large Plough with Instruments of like kind, and the lighter earth a Plough

and Instruments of more ealie substance: as for the labour it must be such, and no other, then that which hath beene already declared in this Booke.

And hence it comes that the office and duty of every skilfull Plough-man, or Carter, is first to looke to the nature of the earth, next to the seasons of the yeere, then to the customes and fashions of the place wherein he liveth: which customes although they be held as second natures amongst us, and that the best reasons of the best worke-men commonly are, that thus I do because thus they do; yet would I wish no man to bind himselfe more strictly to custome, then the discourse of reason shall be his warrant, and as I would not have him to prejudicate in his owne opinion, so I would not have him too great a slave to other mens traditions, but standing upon the ground of reason made good by experience, I would ever have him profit in his owne judgement.

The carters office,

Now the further office and duty of the Husbandman, is with great care and diligence, to respect in what sort of fashion to plow his ground; for although I have in the former Chapter shewed how he should lay his furrowes, what depth he shall plow them, and how he shall be able to raise and gaine the greatest store of mould, yet is there also another consideration to be had, no lesse profitable to the Husbandman than any of the former, and that is how to lay your lands best for your owne profit and ease, as also the ease of your Cattell which shall draw within your draught; as thus for instance: If your arable land shall lie against the side of any steepe hill (as for the most part all barren earths doe) if then you shall plow such land directly against the hill, beginning below and so ascending streight upright, and so downe againe and

up againe, this very labour and toiling against the hill wil breed such a bitter wearisomnesse to the cattel, and such a discouragement, that you shall not be able to compasse one halfe part of your labour : besides, the danger of over-heating and furlfeiting of your beasts, whence will spring many mortall diseases : Therefore when you shall plow any such ground, be sure ever to plow it side-ways overthwart the hill, where your beasts may tread on the level ground and never directly up and downe, so shall the compasse and measure which you lay upon the ground not be so soon wash'd away from the upper part of the ground, because the furrowes not lying streight down in an even descent, but turned crosse-ways upward against the hill, it must necessarily hold the soile within it, and not let it wash away.

Of cattell
for draught.

Againe, it is the office of every good plow-man to know what Cattell are meetest for his draught ; as whether Oxen or horse, or both Oxen and Horses, wherein is to be understood, that although of all draughts whatsoever within this Kingdome, there is none so good to plow withall, both in respect of the strength, stability, indurance, and finesse for labour, as the Oxen are, in whome there is seldom or never any losse, because whensoever his service faileth in the draught, his flesh will be of good price in the shambles ; yet notwithstanding in this case a man must necessarily binde himself much to the custome of the Country, and fashion of his neighbours ; for if you shall live in a place where fuell is scarce, and farre to be fetch'd, as commonly it is in all barren Countreyes, which, for the most part, are stony Champaines, or cold mountaines ; and your neighbours as well for the speed of their journeyes, as for the length keep

keep horse draughts: in this case also you must do the like, or else you shall want their company in your journey, which is both discomfort and disprofit, if any mischance or casualty shall happen, or being enforced to drive your oxen as fast as they do their horse, you shall not only over-hear, tire, bruise, and spoil them; but also make them utterly unfit either for feeding or labour: and therefore if your estate be mean, and that you have no more but what necessity requires, then you shall sort your Plow or Teeme according to the fashion of your Country, and the use of your neighbours: but if God have blest you with plenty, then it shall not be amisse for you to have ever an Ox-draught or two, to till your Land; and a horse draught to do all your forraign and abroad businesse: so shall your work at home ever go constantly forward, and your outward necessary provisions never wanting. Now for the mixture of Oxen, and horse together, it falleth out oftentimes that the Plowman of force must be provided with catle of both kind, as if he happen to live in a rocky Country, where the steepnesse of the hills, and narrownesse of the ways, will neither suffer Cart, Wain, nor Tumbrell to passe; in this case you shall keep Oxen for the plow, to till the ground with, and horses to carry pots and hookes: the first to carry forth your meanure, and the other to bring home your hay and Corn harvest, your fuel and other provisions, which are needful for your family, as they do both in cornwall, and other mountainous countries, where carts and wains, and such like draught, have no possible passage.

Again, it is the office and duty of every good Plowman to know his severall labours, for every severall Moneth through the whole yeare, whereby no day nor

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hour

hour may be mispent, but every time and season employed according as his nature requirerh: as thus for example.

January.

In the moneth of *January* the painfull Plowman, if he live in fertile and good soyles, as among rich, stiff, simple clayes, he shall first plow up his Pease earth, because it must lie to take bait before it be sown; but if he live in fruitfull well mixt soyles, then in this moneth he shall begin to fallow the field he will lay to rest the year following; but if he live upon hard barren earths: (of which chiefly I write) then in this moneth he shall water his *Meadowes* and *Pasture grounds*; and he shall drain and make dry his arable grounds, especially where he intends to sow Pease, Oats, or Barley, the seed-time following. Also he shall stub up all such rough grounds as he intends to sow the yeer following, and shal measure and trim up your Garden moulds, you shall comfort with manure, sand, or lyme, or all three mixt together, the roots of all barren fruit trees: and also cut down all such timber, onely there will be losse in the bark, for the time is somewhat too early for it to rise. Lastly, you may transplant all manner of Fruit trees, the weather being open, and the ground easie: you may rear Calves, remove Bees, and for your own health keep your body warme, let good dyet and wholesome be your Physitian, and rather with Exercise then sauce, encrease your appetite.

February.

In the moneth of *February*, either set or sow all sorts of Beanes, Pease, and other Pulse, and the stiffer your ground is, the sooner begin your work, prepare your garden mould and make it easie and tender, prune and trim all sorts of Fruit trees from mosse, cankers, and all superfluous branches; plash your hedges; and lay

lay your quicksets close and intire together; plant Roses, Gooseberries, and any fruit that growes upon little bushes; graft at the latter end of this moneth upon young and tender stockes, but by all meanes overlade not the stockes.

Lastly, for your health, take heed of cold, forbear meats that are slimy & phlegmatick, and if need require either purge, bathe, or bleed, as Art shall direct you.

In the moneth of *March*, make an end of sowing of *March*. all sorts of small Pulse, and begin to sow Oats, Barley, and Rye, which is called *March-Rye*; graft all sorts of Fruit trees, and with young Plants and Syens replenish your Nurcery, cover the roots of all trees that are bared, and with fat earth lay them close and warm: if any tree do grow barren, bore holes in the root, and drive hard wedges or pins of Oak wood therein, and that will bring fruitfulness: transplant all sorts of Summer flowers, and give new comfort of manure and earth to all earely outlandish flowers; especially to the *Crown Emperiall*, *Tulippes*, *Hiacinth*, and *Narcissus*, of all shapes and colours, cut downe Under-wood, for fowell and fencing, and look well to your Ewes, for then is the principall time of yeaning.

And lastly, bathe often, and bleed but upon extremity, purge not without good counsell, and let your Dyet be cool and temperate.

In the moneth of *April*, finish up all your Barley *April*. seed and begin to sow your Hemp and Flax: sow your Garden seeds, and plant all sorts of hearbs; finish grafting in the Stock; but begin your principall inauguration, for then the Rynd is most plyant and gentle: open your Hives, and give Bees free liberty leave to succour them with food, and let them labour for their living.

Now cut down all great Oak-timber, for now the bark will rise, and be in season for the Tanner. Now scowr your ditches, and gather such manure as you make in the streets and high-ways, into great heapes, together; lay your meadows, sleight your corn-ground, gather away stones, repair your high waies, set Oziers and willows, and cast up the banks and mines, of all decayed fences.

Lastly, for your health, either purge, bathe or bleed, as you shall have occasion, and use all wholsom recreation, for then moderate exercise in this moneth, there is on better Physick.

May. In the month of *May*, sow barley upon all light sands and burning grounds, so likewise do your Hemp and Flax, and also all sorts of tender garden seeds, as are Cucumbers and Mellons, & all kind of sweet smelling herb and flowers; Fallow your stiff clays; summer stir your mixt earth, and soyl all light and loose hot sands: prepare all barren earth for wheat and Rye, Burn bait, Stub grosse or Furs, and root out broom and Fern; begin to fold your sheep, lead forth manure, and bring home fuel and fencing, weed your winter corn, follow your common works, and put all sorts of grasse, either in pasture or teath: put your mares to the horse, let nothing be wanting to furnish the Dairy: and now put off all your winter-fed fat cattell, for now they are scarcest and dearest, put young Steares and dry Kine now to feeds at fresh grasse, and away with all pease-fed sheep for the sweetnesse of grasse mutton will pull down their prices.

Lastly, for your health, use drink that will coole and purge the blood, and all other such phisicall precepts, as true art shal prescribe you: But beware of Moun-
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rebanks and old wives tales, the latter hath no ground, and the other no truth, but apparent cosenage.

In the moneth of *June*, carry sand, marle, lime, and lime. measure of what kind soever to your land; bring home your coales and other necessary fuell fetcht farre off, shear early fat sheep, sow all sorts of tender hearbs, cut rank low medowes, make the first return of your fat cattel, gather early summer fruits, distill all sorts of plants and hearbs whatsoever.

And lastly, for your health, use much exercise, thin dyet, and chaste thoughts.

In the moneth of *July*, apply your hay harvest, for a *July*. day stackt is many pounds lost, chiefly, when the weather is unconstant, shear all manner of field sheep, Summer stir rich stiffe grounds, soile all mixt earths, and latter soyl all loose hot sands, let hearbs you would preserve now run to seed, cut off the stalkes and outlandish flowers, and cover the roots with new earth, so well mixt with measure as may be, sell all such Lambs as you feed for the butcher, and still lead forth sand, marle, lime, and other measure; fence up your Copses, graze your elder under-woods, and bring home all your field timber.

And lastly, for your health, abstain from all Phisick, bleed not, but upon violent occasion, and neither medle with wine, women, nor other wantonneffe.

In the moneth of *August*, apply your Corne-har- *August*. vest, shear down your wheat and Rye, mowe your Barley and oats, and make the second returne of your fat sheep and cattel; gather all your summer greater fruit, plumbs, apples, and peares; make your summer, or sweet Perry and Cider; set slips, and Syens of all sorts of Gilly-flowers, and other flowers, and transplant them

that were set the spring before, & at the end of this moneth begin to winter rig all fruitfull soyls whatsoever. geld your Lambs, carry measure from your Dovecoats, and put your Swine to the early or first mast; And lastly for your health, shun feasts and banquets, let Physick alone, hate wine, and only take delight in drinks that are cool and temperate.

September.

In the moneth of *September*, reap your pease, beanes, and all other pulse, making a finall end of your harvest; now bestow upon your Wheat land your principall measure, and now sow your wheat and rye, both in rich and in barren climats; now put your swine to mast of all hands, gather your winter fruit, and make sale of your wool, and other summer commodities; now put off those flocks of Bees, you mean to sell or take for your own use, close thatch, and dawb'd warm, all the surviving hives, and look that no Droans, Mice, or other Vermine be in or about them; now tharch your flacks and reeks, thrash your Seed, Rye, and Wheat, and make an end with your Cart of all forraign Journeyes.

October.

Lastly, for your health, in this moneth, use Physick but moderately, forbear fruits that are too pleasant or rotten, and as death, shun Rye and Suifeit.

In the moneth of *October*, finish up your Wheat seed, scowr Dirches and Ponds, plash and lay hedges and quickset, transplant, remove, or set all manner of fruit-trees, of what nature or quality soever; make your *winter cyder* and *perry*, spare your private pastures, and eat up the corn fields and commons, and now make an end of Winter ridging, draw furrowes to draine, and keep dry your new sown Corn, follow hard the making of your Malt, rear all such calves as shall fall, and

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wean those foals from your draught mares, which the spring before were foaled: now sell all such sheep as you will not winter. give over folding, and separate Lambes from the Ewes, which you purpose to keep for your own stock.

Lastly, for your health, refuse not any needfull Physick at the hands of the learned Physitian, use all moderate sports, for any thing now is good, which reviveth the spirits.

In the moneth of *November* you may sow either *November.* wheat or Rye in exceeding hot soyles, you may then remove all sorts of fruit trees, and plant great trees, either for shelter or shadow: now cut down all sorts of timber, for plowes, carts, axeltrees, naves, harrowes, and other husbandly offices, make now the last return of you.ASSE fed cattle; bring your swine from the mast, and kill them for slaughter, rear what calves so ever fall, and break up all such Hemp and Flax as you intend to spin in the winter season.

Lastly, for your health, eate good, wholesome, and strong meates, very well spiced and drest, free from rawnesse, drink sweet Wines, and for digestion ever before cheefe prefer good and moderate exercise.

In the moneth of *December*, put your sheep and *December.* swine to the Pease Reekes, and fat them for the slaughter and market; now kill your small Porkes, and large bacons, lop hedges & trees, saw out your timber for building, and lay it to season, and if your land bee exceeding stiff, and rise up in an extraordinary furrow then in this moneth beginne to plow up that ground

whereon you mean to sow clean beans only, now cover your dainty fruit trees over with carvase, and hide all your best flowers from frost and stormes, with rotten old horse-litter; now drain all your corn-fields, and as occasion shall serve, so water and keep moist your meadows, now become the fowler with peece-ners and all manner of Engin; for in this moneth no fowl is out of season: Now fish for the carp, the Bream, Pike, Tench, Barbell, Peal and Salmon.

And lastly, for your health, eat meats that are hot and nourishing: drink good wine that is near sprightly and lusty, keep thy body wel clad, and thy house warm, forsake whatsoever is flegmatick, and banish all care from thy heart, for nothing is now more unwholsome, then a troubled spirit.

Many other observations belong unto the office of our skilful Plowman, or Farmer; but since they may be imagined too curious, too needless, or too tedious, I will stay my Penne with these already rehearsed, and think to have written sufficiently, touching the application of grounds and office of the Plow-man.

The end of Markham's farewell to Husbandry.

FINIS.